

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

Founded in 1909

FIRST AERONAUTICAL WEEKLY IN THE WORLD

OFFICIAL ORGAN OF THE ROYAL AERO CLUB

No. 1398. Vol. XXVIII.

OCTOBER 10, 1935

Thursdays, Price 6d.
By Post, 7½d.

Editorial, Advertising and Publishing Offices: DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1

Telegrams: Truditor, Sedist, London.

Telephone: Hop 3333 (50 lines).

HERTFORD ST.
COVENTRY.
Telegrams: Autocar, Coventry.
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Home and Canada: Year, £1 13 0.
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6 months, 16s. 6d. 3 months, 8s. 3d.
6 months, 17s. 6d. 3 months, 8s. 9d.

Channel and Empire

SIR SEFTON BRANCKER once said that the air services across the Channel could only be regarded as a full-scale experiment; and certainly in the early days they did little more than teach the operating companies how to run an air line. Now, of course, they have grown to something far more important than that, and unsubsidised companies have found it worth while to fly across the Channel. It is, however, interesting to note that in the statistics of Imperial Airways' operations for 1934, published in the Report of the Civil Aviation Department, it is only on the cross-Channel services (excluding those from London to Egypt) that the traffic of Imperial Airways, reckoned in ton-miles, shows a decline. The decline is more apparent than real, for, as the report points out, in 1934 more direct courses were followed between stopping places than in the previous year, thus reducing the route mileages on which the statistics are based. The actual reduction amounted to 81,500 ton-miles in the year.

Even if Imperial Airways had suffered a fairly serious loss of traffic on the cross-Channel services, it would not be a cause for bitter lamentations so long as the Empire services continued to show better returns each year, and happily the report shows that this was very markedly the case in 1934. The ton-mile figures for the London-Egypt service increased by 145,000. Those for Egypt-India-Singapore increased by 276,500, but in the previous year the section Karachi-Singapore was not running before July 1, which means that the figures for the two years are not justly comparable. The Egypt-South Africa figures increased by 187,900 ton-miles, which is very satisfactory. The total ton-miles of all services for the year amounted to 3,152,400, showing an increase of 528,300.

As regards regularity, the cross-Channel services, as might have been expected, have the worst record. Ex-

cluding the experimental night service in the last quarter of the year, 4,115 flights were scheduled, of which 111 were cancelled altogether and 37 were not completed. These figures may be taken as a proof that the company's rule of "Safety First" is rigidly obeyed. On the Empire routes the results were simply splendid. Only one flight was cancelled (on the Egypt-India-Singapore section) and all the others were started and completed. Certainly there were a number of unscheduled landings, ten on the London-Egypt section, thirty-three on Egypt-Singapore, and thirty-nine on Egypt-South Africa, rather more than half of them being due to weather. Nevertheless, all the started flights were successfully completed, and a better record than that could hardly be expected.

Italy and Ethiopia

ITALY'S air action in the struggle now taking place would seem, from the reports of special correspondents so far received, to centre on the exploits of Count Ciano, the son-in-law of Signor Mussolini. Last Sunday, we read, he was in the air for four hours, and he returned with three bullet holes in non-vital parts of his machine. From what has been published about the efficiency of Ethiopian rifles, it is surprising that any aeroplane was hit at all, for aeroplanes do not make easy targets for even expert riflemen. It is also interesting to read, in a report from Turin, that Italian aircraft used up all their machine-gun ammunition in low-flying attacks and that the air gunners were finally using rifles from the aeroplanes. If Italian rifle ammunition does not fit Italian machine guns, it would seem that the ordnance and supply services of the Italian force have a rather unnecessary problem to add to those which are unavoidable. But perhaps the Turin journalist is not a military expert.

In a country like Abyssinia air reconnaissance will be

invaluable, but it is questionable whether aerial bombardment will prove of much practical value. Its moral effect may, of course, be very great. Damage may be done by air bombs to large concentrations of Abyssinian troops, but mountaineers, as we have learnt on the Indian frontier, are usually very good at scattering and taking cover.

Of important material, it seems that there is very little in Ethiopia to be damaged by bombs. Savage peoples are easily terrified by novel terrors, but their nervous systems are not highly strung, and when they find that air raids do comparatively little damage they often are quick to recover their equanimity.

"Knock-down" Aeroplanes

FOR very many years it has been possible to buy, in the United States of America, the component parts of canoes, sailing boats and motor boats, roughly finished and with full-scale drawings to serve as a guide in finally sawing and planing the components to the exact finished shape. In this country there was, for a number of years, an epidemic of home-assembled wireless sets, the "constructor" buying his components, assembling them on the baseboard and doing the wiring.

It would seem that we are now on the eve of a period in aircraft construction in which something between the "knock-down" boats of America and the home-assembled wireless set of a few years ago is to be offered to the public.

Generally speaking, the parts of the *Pou du Ciel* are of such ample dimensions that there is probably little to be feared from structural weakness. At any rate, if the amateur constructor buys his parts from a reputable firm and uses ordinary commonsense in doing his carpentry, or, better still, gets someone to assist and advise him who knows something about aircraft construction, one need probably not be unduly anxious about the outcome. The real difficulty will arise when it comes to piloting the *Pou*.

M. Mignet is very emphatic about the need for caution, and the soundness of his advice cannot be too strongly urged. In effect, the "father" of the new movement implores his disciples to be patient. Wait for a flat calm; begin by getting thoroughly used to the noise and draught while taxiing; once the "feel" has become familiar proceed to short hops; then to longer hops; then to short flights with gentle turns; then to longer turns; and finally take off and do a circuit, but take plenty of time over it all—weeks, if need be. Above all, beware of the spectators, especially those of the sneering kind. Disregard them. They will not pay for repairs if the beginner lets their remarks "get under his skin" and cause him to do things against his better judgment.

The time spent in learning the rudiments of handling the *Pou* will not be wasted. Incalculable harm can be done to the movement by frequent crashes, and it behoves everyone who takes up "*Pouing*" to see that the pastime does not get a bad name. The establishment of a school for *Pou* pilots is worth considering.



POUX ON PARADE. *Pou-du-Ciel* enthusiasts and thousands of the general public visited Orly Aerodrome, near Paris, to watch a rally of *Pou-du-Ciel* and other ultra-light aircraft. The event is reported on pages 381 and 382. (Flight photograph.)

The Outlook

A Running Commentary on Air Topics

Simplified Controls

ON the next two pages will be found a description of a new Italian aeroplane which incorporates an attempt at relieving the pilot of one of his three controls, viz., the ailerons. The scheme is very ingenious, but seems somewhat roundabout in that it introduces not only automatically operated ailerons, but also automatic slots and "interceptors" linked to the ailerons.

Objections that come to mind relate to the effects of engine-torque reaction, while the possibility of a peculiar type of wing flutter cannot be entirely ruled out.

In his *Pou-du-Ciel*, M. Henri Mignet endeavours to achieve the same result by giving his wings a very pronounced dihedral angle. It may, however, be that the Italian Jona will be found to possess one advantage: If a *Pou* "drops a wing" (not literally, of course) just as it is coming in to land, the whole machine is tilted and must touch with one wheel first. With the Jona scheme it seems possible that, if the scheme works at all, this eventuality would not arise, as it is to be expected that the response of a wing only, as in the Jona, will be much more rapid than the response of the complete *Pou* to the righting moments.

The Real Difficulty

IT is not impossible to visualise an aeroplane with but a single flying control. Mr. Gordon England will, we think, bear us out when we say that, as long ago as 1913, or thereabouts, the Wight seaplane could be flown "entirely on the throttle"; that is to say, at one particular throttle setting the machine just flew level. More throttle caused a climb, less throttle a loss of height. We do not, of course, claim that the actual landing could be effected without use of the elevator. That would presuppose that the machine must land at its normal cruising speed. But simplification of controls does appear to be quite possible. It is important, however, to realise that no degree of control simplification will go the whole way towards making flying easy. There still remains the greatest difficulty of all: that of judging the approach to the aerodrome. Until we can produce an aircraft in which the pilot can bring his machine over the hedge on the near side, throttle down his engine and leave the machine to land itself except for keeping it headed into the wind, it is probably rather futile to go to a great deal of trouble to do away with one of the existing controls.

The subject of landing in gliding flight without "flattening-out" is intimately bound up with the undercarriage. It should not be impossible to devise one which would give a very long stroke and therefore capable of absorbing the shock. As we visualise it, such an undercarriage would be a "three-position" affair. In flight it would be retracted. For landing it would be fully "down," and the extra resistance would be no disadvantage as it would merely tend to steepen the glide. For the take-off one would not wish the wheels to be so far down, as this would give rather a grotesque ground angle and would introduce difficulties in getting the tail up, and so forth. For this, therefore, we imagine an intermediate position of the undercarriage. Things could probably be so arranged that the telescopic struts of the undercarriage would, after being fully compressed during a landing, return to the intermediate position ready for the next take-off. If someone will produce such an undercarriage, the increase in the popularity of flying is likely to be considerable.

Another Step Forward

IT has always been obvious that, so long as air routes are flown over by daylight only, surface transport, which can be used by day or by night with almost unimpeachable regularity, will retain a strong lead in the minds of the travelling public.

Air travel may be more comfortable and infinitely more swift, but if the most impatient traveller can arrive at his destination sooner by nocturnal surface travel than by very fast day travelling the air services will continue to be only partly used. During the winter, of course, daylight hours are reduced to a matter of nine or so, and air services are further handicapped.

The fact, therefore, that United Airways are planning to continue and extend a service which will involve night flying is of particular interest, and it remains to be seen whether air passengers will learn to treat it as a matter of course.

Slowly, but no less surely, the number of airports with full night-landing equipment and with D/F facilities is increasing, and eventually, it is to be hoped, there will be no need either to modify time-tables or to reduce the number of services (save over holiday routes) during the winter months.

Ears and Eyes

SOME air line pilots still seem a little neglectful of their passengers' physical comfort when descending at the end of a journey. The man who is accustomed to flying is inclined to forget that the casual passenger often does not realise that ear discomfort can be minimised by "swallowing," and therefore suffers unnecessarily.

The degree of discomfort, too, appears to vary greatly with the individual. One of our acquaintances always suffers, in addition to normal ear discomfort, an extremely severe "red-hot needles" pain just behind the eyebrows, even in quite a gentle descent from 2,000ft. or so. He has this experience only during the first landing on a journey; he feels no pain during any subsequent landing made within the next few hours. Although he has made considerable enquiry among flying people he has failed to find any fellow-sufferers, and he is curious to know the pathological explanation.

Composite Cooling

AS the re-engined Hawker types percolate into the Service, observant readers will notice that the front starboard centre-section strut in these aeroplanes is rather more corpulent than its fellow-members.

This is accounted for by the composite cooling system which is being used with the new Kestrel engines supplied to the R.A.F. These normally deliver about 75 h.p. more than their forerunners, and yet their abdominal radiators (retractable on the two-seaters and fixed on the smaller types) are no larger than before. The size of the radiator is fixed not by the speed and power on climb, as previously, but by level flight conditions: the steam which may be formed on a sustained climb as a result of the smaller radiator is led to a condenser in the leading edge of the top centre-section and thence back into the water system. Hence the larger strut.

On climb, therefore, the Kestrel is part water-cooled, and part steam-cooled, but in level flight it may be regarded as a straightforward water-cooled unit. Hence the description "composite cooling."

A NOVEL TWO-CONTROL

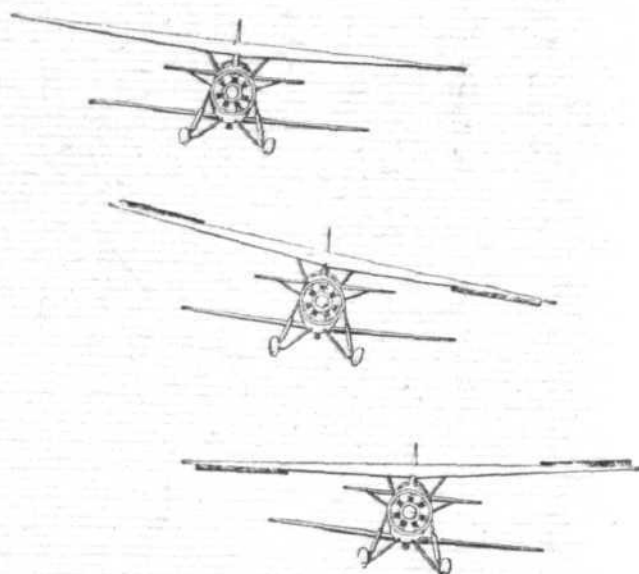
*Italian Design with Upper Wing on Centre Pivot : Ailerons Not Under Control
Possible Risk of Unnatural*

THERE are many who hold that the aeroplane as we know it to-day suffers from too great complication of controls. To co-ordinate the movements necessary for the simultaneous working of rudder, elevator, and ailerons has been likened to the feat (to many people almost impossible) of rubbing one's chest with one hand and patting one's head with the other while carrying out a circling movement with one leg. Actually this is, of course, an exaggeration, but it is generally agreed that if it were possible to relieve the pilot of one of the three controls, something worth while would have been achieved.

There is by no means unanimity concerning which of the three controls it would be most logical to suppress, as correspondence in *Flight* some months ago proved. M. Henri Mignet, in evolving his *Pou*, argued that the ailerons got the pilot into trouble, and proceeded to suppress them. Others at least as qualified to judge have maintained that the rudder is the "unnatural" control, and that, if one is to go, it should be the rudder. Several aeroplanes recently produced, including the new De Havilland Hornet Moth, have had their c.g. positions, fin areas, and so forth, so proportioned and located that all ordinary manoeuvres can be carried out without using the rudder at all. To do away with the rudder as a control surface has not, however, been thought advisable, as there are conditions in which rudder control may be very essential. This is most likely to occur during take-off or landing. The machine may be caused to swing, as, for example, by one wheel striking a rut, and the aileron control would not, it is argued, correct the swing without at the same time causing a probably unwanted bank.

A Milan engineer, Alberto Jona, has evolved a scheme which, he claims, gives the aeroplane the desired lateral stability without the necessity of the pilot operating the ailerons. The machine is fitted with ailerons, but they are worked automatically and not by the pilot.

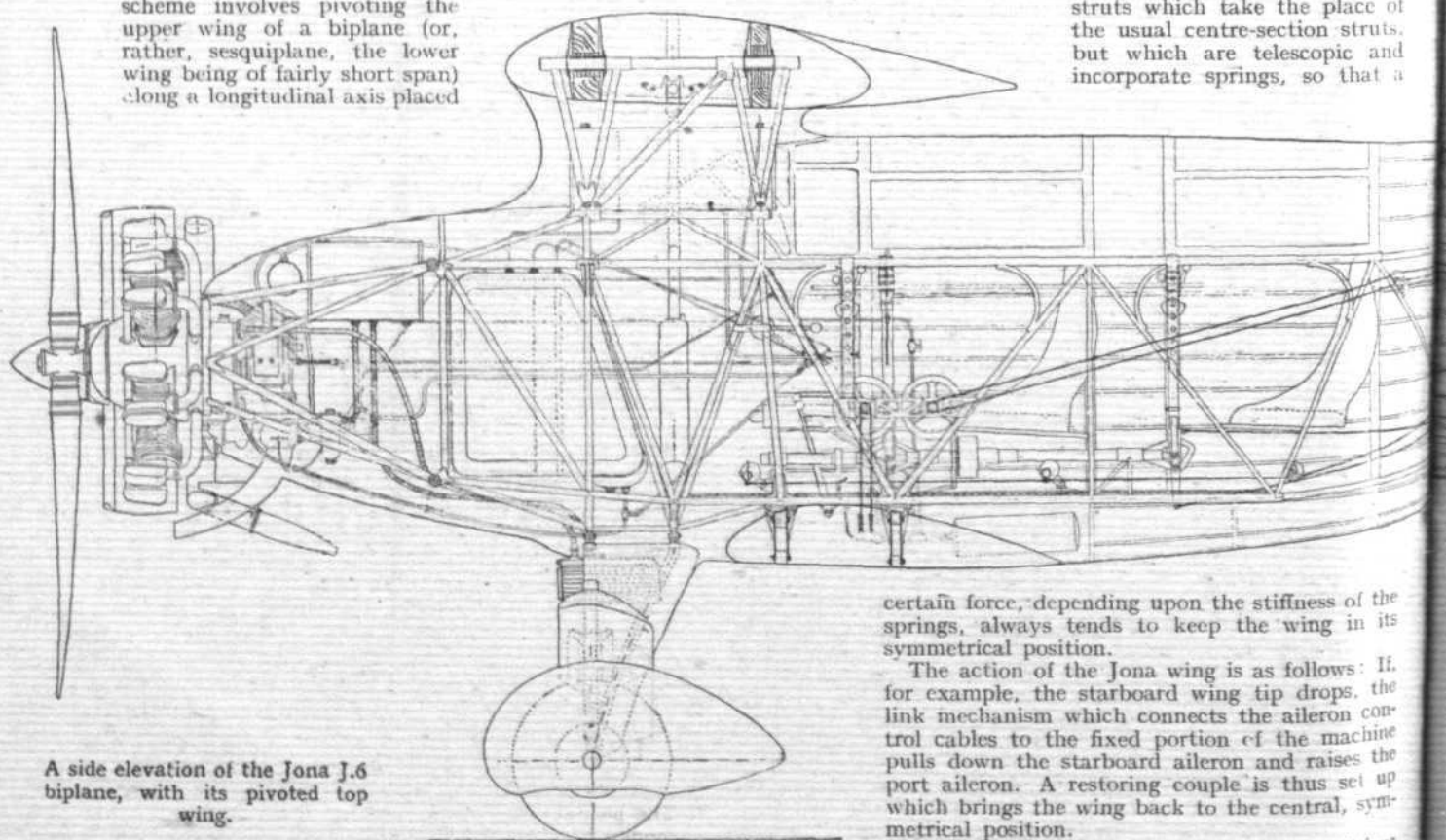
Briefly explained, the Jona scheme involves pivoting the upper wing of a biplane (or, rather, sesquiplane, the lower wing being of fairly short span) along a longitudinal axis placed



This diagram shows how the pivoted upper wing of the Jona J.6 automatically operates the ailerons to restore it to the central position.

parallel with the chord at mid-span, leaving the wing free to rock around this axis. The aileron controls are connected in such a way that, when a wing tip rises, the aileron on that side is raised and the aileron on the opposite side lowered to restore the wing to its symmetrical position with reference to the fuselage.

Actually, the wing is not entirely free to rock around its fore-and-aft axis. To stop undue exuberance on the part of the wing tips in their movements up and down, the wing is braced diagonally by a pair of struts which take the place of the usual centre-section struts, but which are telescopic and incorporate springs, so that a



A side elevation of the Jona J.6 biplane, with its pivoted top wing.

certain force, depending upon the stiffness of the springs, always tends to keep the wing in its symmetrical position.

The action of the Jona wing is as follows: If, for example, the starboard wing tip drops, the link mechanism which connects the aileron control cables to the fixed portion of the machine pulls down the starboard aileron and raises the port aileron. A restoring couple is thus set up which brings the wing back to the central, symmetrical position.

It is realised by the inventor that conditions

AEROPLANE

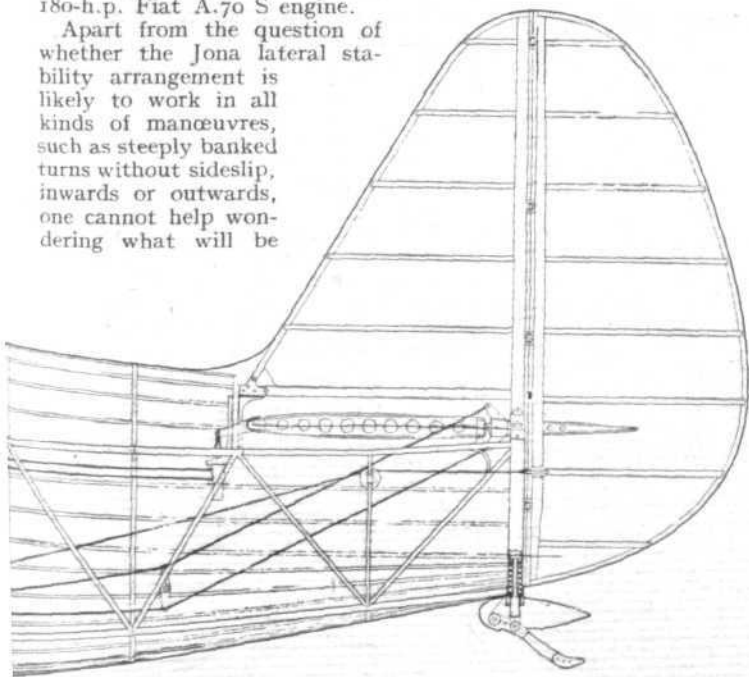
Pilot : The Torque-reaction Problem : The Problem of Flutter

might arise when this arrangement, by itself, would be inadequate. For instance, he quotes the case when the wing tip drops at or near the stalling angle. The aileron control might not be sufficient to bring the wing tip up, and, to ensure that the power to do so shall always be present, Signor Jona uses, in addition, Handley Page automatic wing-tip leading-edge slots, and "interceptors" linked to the ailerons. It might here be explained that "interceptors" are small strips of material, wood or metal, which normally lie flat against the upper wing surface, or are housed in recesses in the wing. When brought into operation they are either swung upward around a hinge, or raised bodily from their recesses in the wing. Their action is to spoil the lift of the portion of the wing over which they act.

The machine on which the new wing arrangement is being incorporated was built by the P. Magni Aviazione works to the order of the Italian Government, and the intention is that the machine, known as the Jona J.6, shall be exhibited at the Milan Aero Show, which is due to open next Saturday. But few particulars of the machine are available, and no performance figures are released. These, however, are relatively unimportant in comparison with the new wing arrangement. The fuselage is of welded steel tube construction, while the wings are mainly built of wood and are plywood-covered. The gross weight is about 2,000 lb., and the disposable load 715 lb. The span of the pivoted wing is 33 ft. 6 in., and that of the lower wing 22 ft. The total wing area is 197 sq. ft. The engine is a Fiat type A.54 of 140 b.h.p.

Signor Jona intends to have a second machine at the Milan Aero Show. This is a four-seater pusher biplane with a 180-h.p. Fiat A.70 S engine.

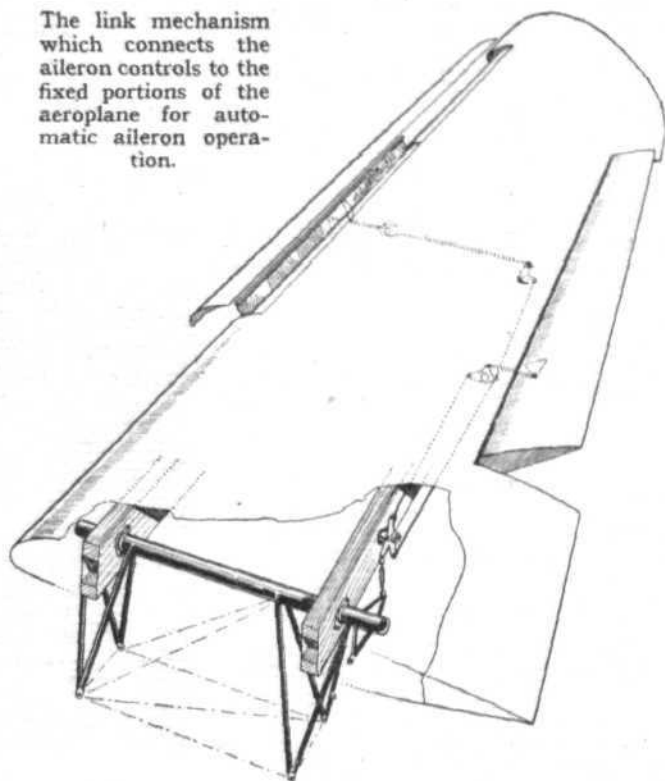
Apart from the question of whether the Jona lateral stability arrangement is likely to work in all kinds of manoeuvres, such as steeply banked turns without sideslip, inwards or outwards, one cannot help wondering what will be



the effect of engine torque. One would imagine that torque reaction will cause the wing to be always slightly tilted from its symmetrical position, and the ailerons set over to counteract this. Whether a sufficiently correct adjustment of all the linkages, spring tensions, and so forth can be secured to bring about a stable condition of settings in all conditions of torque-reaction, whether "engine on" or "engine off," may be open to some slight doubt.

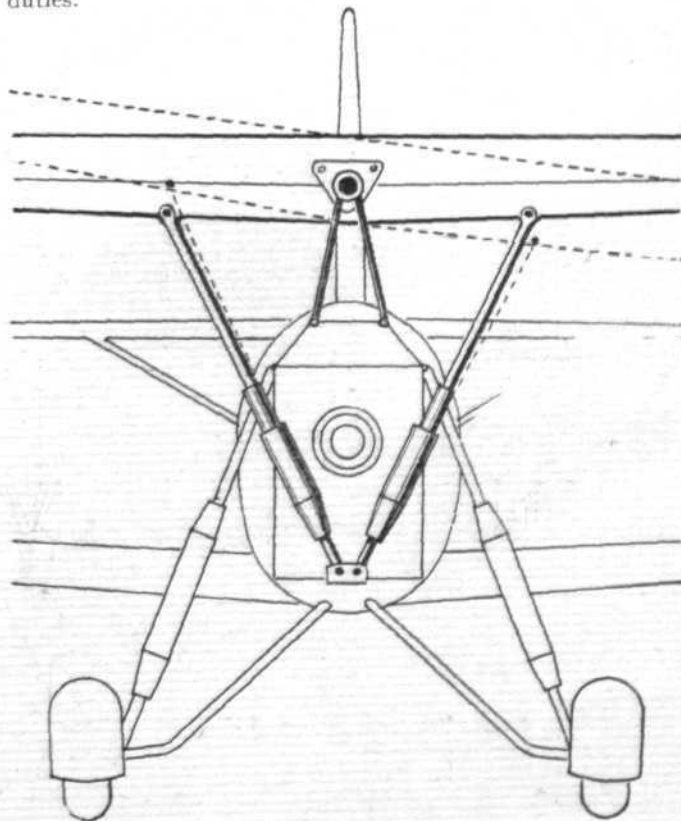
It is also possible to visualise the opportunity which such a wing arrangement may provide for wing flutter of a somewhat unusual kind. What with ailerons geared to a rocking wing, dampers introduced in the steadying struts, automatic wing-tip slots, and interceptors linked to the ailerons, it is not difficult to imagine that conditions favourable to the setting up of flutter might arise. However, it is understood that provision has been made for locking the rocking upper wing of

The link mechanism which connects the aileron controls to the fixed portions of the aeroplane for automatic aileron operation.



the Jona J.6 in its central position, and for normal lateral control to be effected by ailerons on the lower wing in case of emergency. The experiment is certainly interesting, and the results of flight tests will be awaited with considerable interest.

Among the advantages of the Jona wing arrangement claimed by the inventor is, somewhat curiously, that for blind flying the two occupants would share the control of the machine between them, so that each would have but one control to look after, one attending to the height of the machine and the other concentrating on accurate course-keeping. It is a little difficult to see the advantage of such a division of duties.



The pivoted wing is not entirely free to rock around its longitudinal axis, but is restrained by two diagonal telescopic struts.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

Flying Dictators?

For the convenience of passengers, typewriters are being installed in the German Luft Hansa Company's aeroplanes.

The Latest High Dive

A Czechoslovakian lieutenant named Pawlowsky has just made a parachute jump from 28,770 feet, thereby establishing, it is claimed, a new world's record.

In Memorium

Three survivors of the R.101 disaster, which occurred five years ago, were among those who attended the service in memory of the victims at Cardington Church last Sunday.

Light Advertising

An announcement from the Otto Brinkmann Airship Company, a Bavarian concern, states that the company has received from the U.S.A. orders for ten airships for advertising purposes.

Black and Mac Back

Mr. T. Campbell Black and Mr. J. H. G. McArthur, who were forced to bid their Comet a sad farewell a few hundred feet above the desert the other week, arrived home "Imperially" last Saturday.

Tragedy

In descending from a high altitude preparatory to making a landing at Cheyenne, Wyoming, on Monday morning, a Boeing of United Air Lines struck a hill top, killing its nine passengers and crew of three.



WELCOME: Colonel Ralph Wenniger, just appointed as the first Air Attaché to the German Embassy in London. He was much to the fore, during the war, as a submarine commander.

A Ducking

Returning to its parent ship late in the day, the Walrus amphibian attached to H.M.S. *Nelson* capsized when landing alongside. It appears that the machine struck the sea, its nose went under, and it overturned. Admiral Sir Roger Backhouse, Commander-in-Chief of the Home Fleet, was on board and suffered from shock and cuts.

Modified

The Parnall Hendy Heck being used by Mr. David Llewellyn for his attempt on the Cape record will not be fitted with a retractable undercarriage, but with one of the cantilever "trouser" variety.

Production in the States

Figures issued by the American Department of Commerce show that 851 aeroplanes were produced in the U.S.A. during the first half of this year. Compared with the figure for the same period last year this shows a 14 per cent. increase.

Swiss Suizas

The Swiss Government has ordered the installation of Hispano Suiza 12 Ydrs liquid-cooled engines of 880 h.p. in two Hawker Demon two-seater fighters.

America Tries the Canon

Amoteur canon of the Hispano 12 Y-type is to be installed in a "hush-hush" new Curtiss fighter.

R.A.F. Armistice Ceremony

The annual Armistice ceremony at the R.A.F. War Memorial, Victoria Embankment will be held at 11 a.m. on Sunday, November 10. Air Chief Marshal Sir Edward Ellington, Chief of Air Staff, will lay a wreath, and detachments of Comrades of the Royal Air Force will be in attendance.

An Imperial Hitch

Imperial Airway's *Hanno* burst its starboard tyre on landing at Entebbe on Sunday evening. Both wings were buckled, two airscrews smashed, and one of the engines forced into the cabin. The pilot was thrown through the windscreen, but the passengers, although shaken, were otherwise unhurt.

Seeing the Wood

A professor of the Stockholm Technical High School has been experimenting with the estimation of standing timber by photographing the forest areas from the air. The Government Department responsible for the royal domains has shown great interest in the experiment, and has authorised expenditure for the completion of the tests.

Twenty-five Years Ago

(From "Flight" of October 8, 1910)

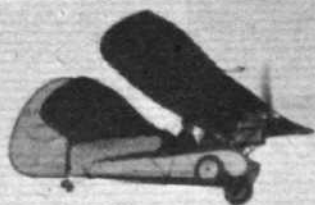
"Is it not possible, with a view to the prevention of fatal accidents, for an airman to have some kind of parachute attachment which could be made to work in the event of a fall? This might be possible in a monoplane where the pilot has no obstructions above him, and when an accident occurs at a great height he might have time to get the appliance to work."—(Reader's Letter.)



A LADY ENTERS: *Lady Southern Cross*, the Lockheed Altair in which Sir Charles Kingsford-Smith is soon to make a fast trip to Australia, being unshipped at London Docks last Monday. The engine is a 550 h.p. supercharged Wasp.



A Pou rudder seen at Orly.



PERFORMING FLEAS

"Pou-du-Ciel" Owners' Rally in France : Great Variety of Power Units : A 40 h.p. Example

(Illustrated with "Flight" photographs)

UNLESS we were to speak of an "incidence of Poux," the exact collective noun by which to describe an assembly of these notable insects escapes us; but whether it was a swarm, flock, herd, school or gaggle which collected at Orly Aerodrome, near Paris, last Sunday, there was no doubt about the amount of interest which it caused among the big crowd.

Actually the rally (which was organised by the French aviation journal *Les Ailes*) attracted only seven true *Poux*, the other two machines which took part in this "Rassemblement de l'Aviation Légère" being motorised gliders—a S.F.A.N. and a Leroy; the former is the B.A.C. Drone built under licence in France, and fitted with a 25 h.p. flat-twin Poinard engine, while the latter is a very similar but rather larger machine, utilising a 30 h.p. A.B.C. Scorpion flat twin, and braced with piano wire instead of the more customary struts. Piano wire seems to die hard in France.

Most of the machines flew, and flew quite well, but those fitted with the 20 h.p. vertical twin Aubier et Dunne two-stroke appeared to have but little reserve of power. It is significant that the great Mignet himself (who was present) has fitted a new three-cylinder Aubier unit. Of 810 c.c., this develops 28 h.p. at 3,400 r.p.m., the air-screw being geared down 2 : 1. Petrol and two oil pumps look after the lubrication, and there are no fewer than three carburettors—one per cylinder—great difficulty having been found in balancing the mixture with only one. The Dunne end of Aubier-Dunne, incidentally, is an American enthusiast who, having lived in provincial France for the past fifteen years, has completely forgotten how to speak

English, or even American. Most of the *Pou* pilots were satisfied with making steady circuits; Mignet, with greater power and more experience, made sweeter turns and flew more accurately. He was using the three-cylinder engine in the actual machine with which he flew the Channel.

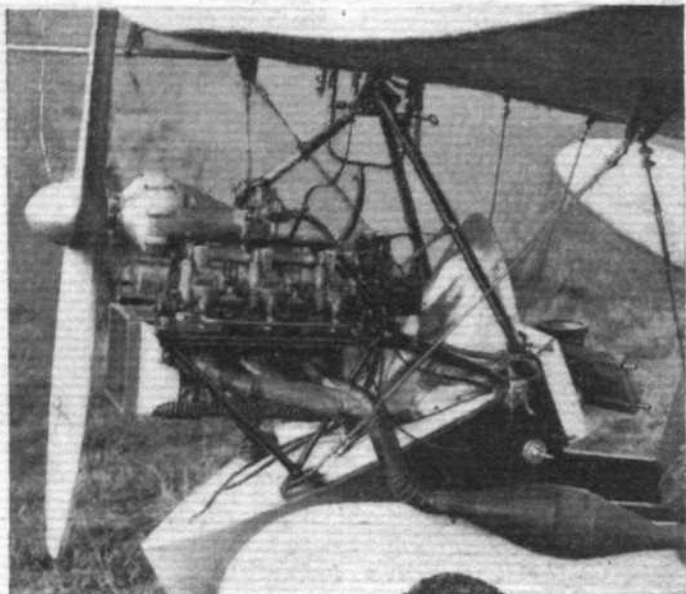
For the best performing flea, however, the laurels (or blanket?) must go to *Pou* No. 6, piloted by F. Kohler, which had a normal type of aeroplane undercarriage and was fitted with a 40 h.p. Salmson A.D.9 radial engine. Kohler was a little dashing at first and went over on to his wing tips while turning to take off, but, after resuming the horizontal, took off in a climbing turn. He then proceeded to do some pretty hectic dives and zooms—which seems to prove that the *Pou*, like other aircraft, likes plenty of power reserve. In fact, this show made all the others look definitely under-powered.



(Above) One of the non-*Pou* contingent—the Leroy (30 h.p. A.B.C. Scorpion).



(Left) The most powerful *Pou* extant—Kohler's 40 h.p. Salmson-engined machine. The fact that the split-type undercarriage considerably raises the centre of gravity must make ground control rather a ticklish process.

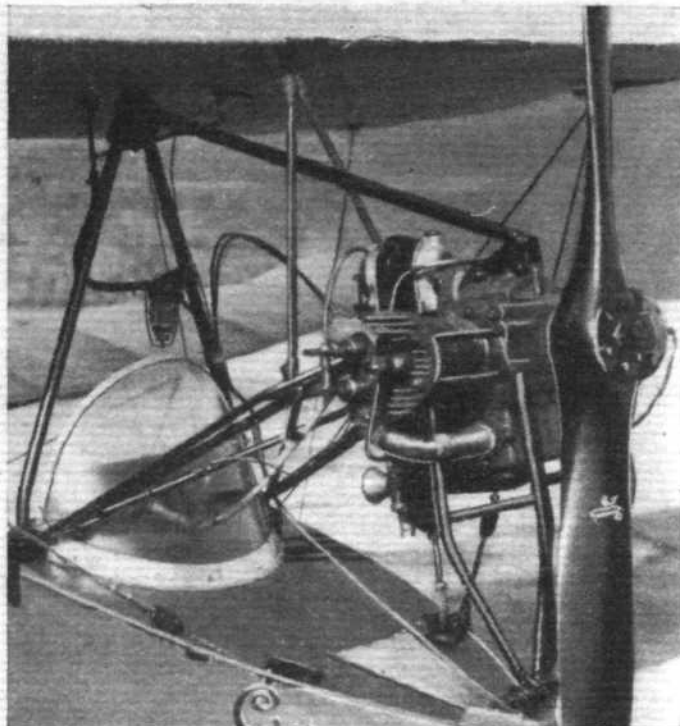


M. Mignet's installation of the new three-cylinder Aubier-Dunne engine. Note the three carburettors, and the air scoop for cylinder cooling.

and when one remembers what can be done with the 40 h.p. Salmson in machines like the Klemm and Swift, one realises how very inefficient the *Pou* is as an aeroplane.

Regarding the crashes which have occurred in France, it appeared to be the general opinion among the owners at Orly that if the *Pou* is dived too steeply it is impossible for the pilot to find the necessary strength to pull the machine out level; but this, possibly, may be entirely dependent on the hinge position of the movable front wing.

Mignet is now a national hero. The crowd lined up like women at a wedding to see him bring his machine out of the hangar. Wild cheers and requests for autographs followed his short talk over the loud speakers, and when he landed from his final flight with his propeller stopped M. Florentine, the genial but strict aerodrome manager, assisted by a dozen



Raymond Pic's *Pou* equipped with a flat-twin Clerget engine of 16 h.p. has a neatly faired-in nose. He retains the rubber tensioners attached to the leading edge.

policemen, had his work cut out to keep the crowd in check. Undoubtedly, whether the *Pou* becomes the motor cycle of the air or not, to Mignet's everlasting credit it must be said that he has brought the great masses of the French public (and a good deal of the English) to think aviation.

At a few minutes to four the well-known Captain Thoret arrived by air on the French-built Drone on which he crossed the Alps, and for the next twenty minutes or so gave an excellent exhibition of the flying qualities of that machine. There was very little wind, but his slow flying was marvellous, and finally he did some aerobatics. These took the form of the usual low flying in front of the crowd, with a sharply banked climbing turn as the edge of the aerodrome was reached. He then ascended to about two thousand feet and proceeded to do what can only be described as screw loops. After losing height by a succession of sharp stalls, he was unfortunate enough to damage his undercarriage slightly on landing.



In this picture of Kohler's machine, a close-up view of the 40 h.p. Salmson engine is obtained.



Edouard Joly's *Pou* has a 25 h.p. flat-twin Poinard engine.

THE ROYAL AIR FORCE

SERVICE NOTES AND NEWS



AIR MINISTRY ANNOUNCEMENTS

CENTRAL FLYING SCHOOL CATEGORIES

The undermentioned officers have been recategorised as under:—

B. to A.2

Flt. Lts. J. E. MacCullum and D. J. Alvey.

C. to B.

Flt. Lts. I. A. Critchley and D. Dickson.

S.S. OFFICERS FOR PERMANENT COMMISSIONS

The undermentioned flying officers are accorded permission to sit for the examination to be held on November 5th and 6th:—

INLAND AREA

Lewis, E.M.

COASTAL AREA

Hope, N.

AIR DEFENCE OF GREAT BRITAIN

Crockart, N. D., Dean, H. W., Dixon, F. H., Fry, H. L., Grindell, G. J., Kennedy, H. V., Lawrence, P. C., McGhie, I. J., McLean, J. S., Oldfield, J. H. R., Radford, D. S., Rumsey, J. R. L., Salmon, K. D.

HALTON

Keddie, W. M.

MIDDLE EAST

Amison, G. N., Bradley, R. M., Fraser, C. F. S., Keiller, D. R., Stanton, H., Young, R. H.

FAR EAST

Harding, A. J. D., Scott, I. A.

INDIA

Allen, H. R., Buchanan, J. W., Biggar, A. J., Devas, W. G., Holmes, P. H., King, E. B., Mitchell, W. H., Smith, E. T., Stewart, C. M., Wilkins, P. N. J.

MEDITERRANEAN

Macdonald, G. E., Pryde, G. A. M., Russell, H. M.

ADEN

Darley, H. S.

IRAQ

Allsop, H. G. L., Howie, G. R., Wakelin, N. W.

STUDY OF MODERN FOREIGN LANGUAGES

The undermentioned officers and airmen passed the examinations held in June, 1935:—

Arabic

Colloquial

Flt. Lts. H. I. Cozens, W. P. Griffin, M.B., B.Ch., F/Os. D. Stephenson, A. C. P. Carver, P/O. J. J. J. Page, Flt. Serjts. C. T. Burridge, A. Sharman, Serjts. J. C. Downie, J. Mochrie, L.A/Cs. W. F. Bateman, L. F. Henwood, G. Weedon, F. J. Woolley, A/C. 1st Class F. T. Sibbons, Major V. S. Clarke, M.C., Iraq Levies, Lts. K. G. Boas, Iraq Levies, J. M. Le Mesurier, Iraq Levies, Regt. Serjt. Major E. G. Walker, Iraq Levies, Regt. Q.M.S. J. Higgins, Iraq Levies, C.Q.M.S. E. L. Elkington, Iraq Levies, Capt. (Brevet Major) F. R. Grimwood, D.S.O., Aden Levies, Lt. W. H. P. Chattey, Aden Levies.

Preliminary

F/O. C. G. Lott.

FRENCH

Preliminary

Sqn. Ldr. C. K. Chandler, M.B.E., Flt. Lt. R. H. Marthews, L.D.S., F/Os. J. Y. Humphreys, H. Y. Humphreys, L.A/Cs. A. C. Bentley, A. D. Coward, F. R. Dennis, J. G. Portlock, R. Punyer.

Interpretership (2nd Class)

Flt. Lts. C. A. Hoy, M.C., N. C. Ogilvie-Forbes, R. G. Hart, M.C., F/O. G. E. Valentine, Corpl. T. M. Hull, L.A/C. A. W. Gregg.

Interpretership (1st Class)

Wing Comdr. F. W. Stent, M.C., Sqn. Ldr. C. Porri, Flt. Lt. J. M. J. C. J. I. Rock de Besombes.

GERMAN

Preliminary

Flt. Lt. I. B. Newbigging, F/O. F. A. Payuter.

Interpretership (2nd Class)

F/Os. W. E. Coope, J. N. Tones.

KURDISH

Preliminary

F/O. G. C. Tomlinson.

Interpretership (1st Class)

Flt. Lt. J. C. A. Johnson.

MALAY

Colloquial

Sergt. J. McLaughlin, Corpl. E. G. Snape, L.A/Cs. J. G. Cullen, W. C. R. Jeal.

SPANISH

Preliminary

F/O. G. L. S. Griffith-Jones, Corpl. J. Wiles.

INDIAN VERNACULAR

Since April, 1932, the undermentioned officers have passed the Indian languages examinations held in India.

Urdu (Lower Standard)

Flt. Lts. H. M. S. Wright, J. M. Cohu, J. C. Cunningham, C. H. Turner, R. L. Raymond, F/O. W. R. Brotherhood.

Urdu (Higher Standard)

Sqn. Ldr. A. Harvey, M.B., B.Ch., Flt. Lt. C. H. Turner, F/Os. J. J. Watts, J. A. Nicholson.

The undermentioned officer qualified as a 1st class interpreter in Japanese at the examination held in Tokyo in June, 1935, and has received the appropriate award:—Flt. Lt. J. Warburton.

The undermentioned officer passed the second year examination in Chinese held in Peking in March, 1935, and has received the appropriate award:—Flt. Lt. G. Bartholomew.

FLYING ACCIDENTS

The Air Ministry regrets to announce that P/O. John Rupert Stephenson of the R.A.F. Station, Gosport, lost his life in an aircraft accident which occurred at Stokes Bay on October 1. P/O. Stephenson was the pilot and sole occupant of the aircraft.

Also that P/O. Haldane Georgeson, of No. 23 (Fighter) Squadron, Biggin Hill, lost his life in an aircraft accident at Calshot on Monday. P/O. Georgeson was the sole occupant of the aircraft.

AIR FORCE LIST

The October issue of the *Air Force List* has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses: Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; 2, York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square, Belfast; or through any bookseller.

MORE PERMANENT COMMISSIONS

In consequence of the additional requirements for permanent officers resulting from the approved expansion programme, it has been decided to waive, on this one occasion only, the rules debarring from consideration for permanent commissions in the general duties branch short service officers who have completed four or more years' service, medium service officers, and airman pilots who have been remustered to their basic trades.

A.Os.C. are therefore to forward, so as to reach the Air Ministry by December 1 next, recommendations and a priority list in respect of short service officers who will be of four years' service or over on January 1, 1936, and medium service officers who are

regarded as eminently suitable and are desirous of being considered for permanent commissions in the general duties branch. Medium service and short service officers are to be included in one priority list. Such officers will not be required to take the competitive examination and will not be eligible to undergo specialist courses.

The recommendations may also include additional recommendations and an additional priority list in respect of airmen pilots who,

apart from having been remustered to their basic trades, comply with the conditions of eligibility stated in that order. Such airmen must be in flying practice and must have completed less than twelve years' man's service by April 1, 1936.

The number of permanent commissions to be given under this order is narrowly limited and a high standard should be set for recommendation.

ROYAL AIR FORCE GAZETTE

London Gazette, October 1, 1935

General Duties Branch

The following are granted temporary commissions as Flying Officers on being seconded for duty with the Royal Air Force with effect from the dates stated:—Lt. H. C. Bazeley (Royal Artillery), Lt. C. L. Troop (The Duke of Wellington's Regt.) (September 15); Lt. H. L. Maxwell (The Northamptonshire Regt.) (September 23).

The following are granted temporary commissions as Flying Officers on attachment to the Royal Air Force (September 15):—Lt., R.N.—P. N. Medd. Sub-Lts., R.N.—O. N. Bailey, F. A. B. Fasson, J. C. M. Harman, G. E. Lake, W. A. H. Playfair, P. G. Sugden, N. E. Ward. Lts., R.M.—G. D. Gmy, G. Lassen.

P. Ruston is granted a short service commission as Pilot Officer on probation with effect from and seniority of September 16; Lt. Comdr. C. J. N. Atkinson, R.N., is re-attached to the R.A.F. as a Squadron Leader with effect from September 16, and with seniority of January 1, 1933.

The following Flight Lieutenants are promoted to the rank of Squadron Leader (October 1):—R. Pyne, D.F.C., J. M. Glaisher, D.F.C., J. F. Titmas, V. P. Feather, H. N. Thornton, M.B.E. (Acting Squadron Leader), C. R. Strudwick, N. C. Seward, W. Sander, A.F.C., G. C. Bladon, C. N. H. Bilney, C. L. Lea-Cox, W. V. Hyde, A. H. Paull, W. E. Purdin, R. Grice, D.F.C., R. M. Davy, J. A. McDonald, E. D. H. Davies, J. L. Kirby, J. L. Airey, D.F.C., D. d'H. Humphreys.

The following Pilot Officers are promoted to the rank of Flying Officer:—J. H. Becher (sen. September 29, 1934); B. Ball, B. K. Burnett (March 29); G. J. I. Clennell (July 9); P. C. Hilton (August 29); P. H. Dunn, H. M. W. Thomas-Ferrand, P. A. McWhannell (September 3).

The following Flight Lieutenants are transferred to the Reserve Class A:—G. L. G. Richmond (September 26); R. E. Hall (September 28).

Air Comdr. C. E. H. Rathborne, C.B., D.S.O., is placed on the half-pay list scale A (October 1); Lt. Comdr. S. Borrett, R.N., Flying Officer, R.A.F., ceases to be attached to the R.A.F. on return to Naval duty (August 31); Sub-Lt. G. C. Newcombe, R.N., Flying Officer, R.A.F., ceases to be attached to the R.A.F. on return to Naval duty (September 16); Air Comdr. A. W. Bigsworth, C.M.G., D.S.O., A.F.C., is placed on the retired list at his own request (September 22); Sqn. Ldr. A. FitzR. Somerset-Leeks, O.B.E., is placed on the retired list at his own request (October 1); Flt. Lt. E. S. Steady is placed on the retired list (October 1).

Stores Branch

The following Flight Lieutenants are promoted to the rank of Squadron Leader (October 1):—A. P. Woollett, S. D. Dennis.

Accountant Branch

Flt. Lt. J. F. R. Eales-White is promoted to the rank of Squadron Leader (October 1).

Medical Branch

F/O. G. H. Morley, M.R.C.S., L.R.C.P., is promoted to the rank of Flight Lieutenant with effect from September 3, and with seniority

of September 3, 1934; Flt. Lt. (Quartermaster) F. W. Goodread is promoted to the rank of Squadron Leader (September 1).

Dental Branch

Group Capt. C. L. Colbran, O.B.E., L.D.S., is placed on the retired list (September 26).

Commissioned Engineer Officer

Flying Officer on probation H. Hipwood is confirmed in rank (July 20) (substituted for the notification in the *Gazette* of September 17).

Erratum

In the *Gazette* of September 10. Notification concerning appointment of Flight Cadets to permanent commissions. For Wilfrid Albert Anthony de Freitas, read Wilfrid Albert Antony de Freitas.

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

Sister Miss M. Lamont is placed on the retired list at her own request (September 28).

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers

General Duties Branch

H. Barker is granted a commission as Flying Officer in Class A on resigning his commission in the Special Reserve (September 6).

The following Pilot Officers are promoted to the rank of Flying Officer:—K. H. Salusbury-Hughes (August 13); M. O'B. S. Barrington (August 20).

F/O. E. H. Rossington is transferred from Class A to Class C (September 30).

The following Flying Officers relinquish their commissions on completion of service and are permitted to retain their rank:—A. C. Campbell-Orde, A.F.C. (August 19); J. H. Leach (September 21).

Flt. Lt. L. Newcombe relinquishes his commission on completion of service (September 1).

SPECIAL RESERVE

General Duties Branch

The following relinquish their commissions on appointment to short service commissions in the Royal Air Force:—F/O. P. Ruston (September 16); P/O. J. Edwards (September 6).

F/O. H. Baker relinquishes his commission on appointment to a commission in the Reserve of Air Force Officers (September 6).

AUXILIARY AIR FORCE

General Duties Branch

No. 605 (COUNTY OF WARWICK) (BOMBER) SQUADRON.—D. R. Scott is granted a commission as Pilot Officer (August 1).

No. 607 (COUNTY OF DURHAM) (BOMBER) SQUADRON.—The following Pilot Officers are promoted to the rank of Flying Officer:—J. R. Kayll (September 9); M. M. Irving (September 10).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Squadron Leader.—G. V. Howard, D.F.C., to Headquarters, Fighting Area, Uxbridge; for Air Staff (Armament) duties, 17.9.35.

Flight Lieutenants.—J. Bradbury, D.F.C., to No. 33 (B) Squadron, Upper Heyford, 23.9.35. G. P. Charles, to No. 29 (F) Squadron, North Weald, 23.9.35. J. L. F. Fuller-Good, to No. 12 (B) Squadron, Andover, 23.9.35. W. A. Opie, to D.D.R.M. (Dept. of A.M.R.D.), Air Ministry, 21.9.35.

Flying Officers.—H. C. Bazeley and C. L. Troop, to No. 1 Flying Training School, Leuchars; on appointment to Temporary Commissions on being seconded from the Army, 15.9.35. H. L. Maxwell, to No. 1 Flying Training School, Leuchars; on appointment to a Temporary Commission on being seconded from the Army, 23.9.35. R. Hanson, to Armament Training Camp, Leuchars, 25.9.35. P. Bathurst, G. L. Best, C. N. Carpenter, J. H. A. Chapman, R. Faville, D. A. Gibson, W. L. Houlbrook, J. M. D. Ker, A. Pyke, A. A. Saw and F. E. Stokes, all to Home Aircraft Depot, Hendlow, 23.9.35.

Pilot Officers.—J. W. McGuire, to No. 3 (F) Squadron, Kenley, 24.9.35. P. Ruston, to No. 58 (B) Squadron, Worthy Down; on appointment to a Short Service Commission as Pilot Officer (on probation), 16.9.35. E. W. Martin, to No. 10 (B) Squadron, Boscombe Down; on appointment to a Short Service Commission as Pilot Officer (on probation), 21.9.35.

Acting Pilot Officers.—J. Adam, K. L. Ashfold, R. S. Blake, H. Budden, E. P. Chapman, J. Culliford, A. C. Douglas, B. L. Evans,

A. W. Fletcher, G. C. K. George, R. D. C. Gibson, H. S. Giddings, G. E. Hollings, C. B. Hull; D. H. C. Hull, L. L. Hunt, R. G. Hurst, D. A. V. John, C. E. Johnson, G. D. Jones, B. P. King, M. J. Loudon, D. J. McGlinn, M. H. T. Mellish, G. S. Milligan, W. H. R. N. Newton-Howes, R. H. Niven, A. E. Pringle, M. L. Robinson, K. M. Sclanders, H. W. A. Sheahan, W. J. L. Stevenson, P. E. A. Talbot, P. A. Tipping, K. R. S. Tuck, and J. H. Van, all to the R.A.F. Depot, Uxbridge, on appointment to Short Service Commissions as Acting Pilot Officers (on probation) with effect from 16.9.35.

Stores Branch

Flying Officer.—W. M. King, to No. 12 (B) Squadron, Andover, 21.9.35.

Accountant Branch

Flight Lieutenant.—H. Crowther, to R.A.F. Station, Hendon 23.9.35.

Medical Branch

Flight Lieutenants.—L. Freeman, to No. 35 (B) Squadron, Bircham Newton, 23.9.35. J. Kemp, to No. 207 (B) Squadron, Bircham Newton, 23.9.35. G. W. Paton, to No. 3 (F) Squadron, Kenley, 23.9.35.

Flying Officers.—C. A. Lewis, to No. 29 (F) Squadron, North Weald, 23.9.35. G. H. Morley, to No. 12 (B) Squadron, Andover, 23.9.35. J. W. Patrick, to No. 12 (B) Squadron, Andover, 23.9.35. W. G. S. Roberts, to No. 33 (B) Squadron, Upper Heyford, 23.9.35.

HERE and THERE

A "G.E." Guild

A MOVEMENT is on foot to found a Guild of Ground Engineers, on similar lines to the Guild of Air Pilots and Navigators. All licensed ground engineers are asked by the hon. organiser, Mr. R. S. Moore, 17, Chessington Way, West Wickham, Kent, to send him their names and addresses, together with a note of which licences they hold (for reference purposes).

A Drone for Holland

WITHIN a fortnight B.A.C. (1935), Ltd., will be delivering a Super Drone to some people in Holland who may eventually decide to construct the machine under licence. A few weeks ago two Netherlands, both gliding experts, spent a considerable time in the air near Hanworth with the first of the new Drones.

General Aircraft to Build Furies

FOR some time it has been common knowledge that the General Aircraft Company has received a very substantial order for Hawker Furies from the Air Ministry. The exact number may not be given, but the order is interesting in that G.A., Ltd., is the first post-war firm to receive an order for military types.

Specialists in metal construction, the company is in a particularly good position to deal with the manufacture of Service machines. Civil production will be unaffected.

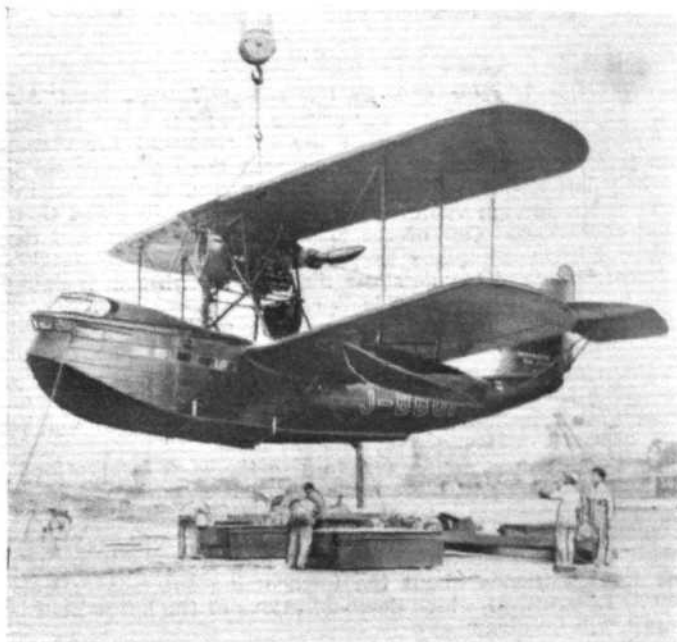
A Valuable Guide

CAR owners or prospective owners who are unable to visit the Olympia Show should not fail to obtain a copy of *The Autocar* dated October 11. They will find in the annual Buyers' Guide in that issue every conceivable item of information about every 1936 model on the British market. Even such items as overall length and width, so important to owners of small motor houses, are given.

The two succeeding issues, October 18 and 25, fully describe and review every exhibit.

Air Commodore Bigsworth

THE retirement of Air Commodore A. W. Bigsworth, C.M.G., D.S.O., A.F.C., recalls a very gallant air fight in the early days of the war. On May 17, 1915, the Zeppelin L.Z.39 and two consorts set out to raid the British coast towns. The R.N.A.S. Squadron at Dunkirk was warned, and when the L.Z.39 was sighted at 3.15 a.m. a number of pilots went up from Dunkirk to attack her. One of them was Flight Commander Bigsworth in an Avro, and he climbed steadily after her until when at 10,000ft. over Ostend he was 200ft. above the Zeppelin. He flew along her back and dropped four 20 lb. bombs, and saw smoke issuing from her tail. She got away, however, and landed at Evere. One German officer was killed by the bombs and several men were wounded. Five gas bags were damaged and the starboard aft propeller was wrecked.



SUPER-SLOTTED: A new six-seater flying boat (330 h.p. "Urukaze" inverted engine) used on the Osaka-Takamatsu-Matsuyama-Beppu service by Nippon Air Transport. The upper wing is slotted along its entire span.

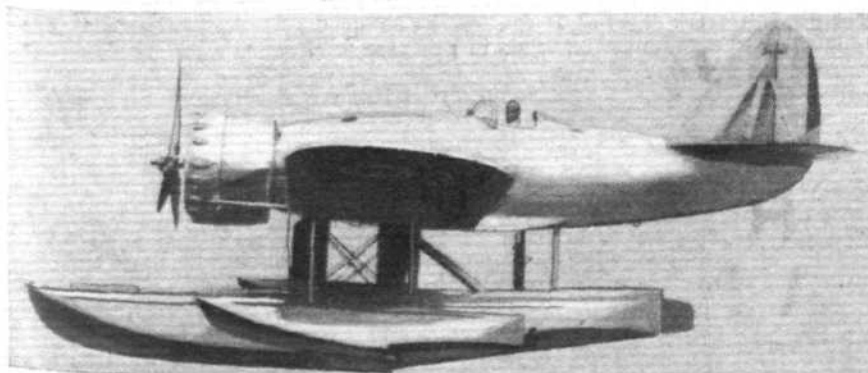
"Pou Nest" at Lympe

LYMPNE, it seems, will soon be the object of a *Pou* invasion. Mr. James Wheatley's *Pou* was to have been put through its paces the other day, but unluckily the requisite number of r.p.m. was not forthcoming. As yet it has not taken the air. Mr. R. G. Doig, of the Universal Aircraft Co., hopes to fly his *Pou* (fitted with an Anzani engine) this week, and, if all goes well, to visit France and M. Henri Mignet.

Service

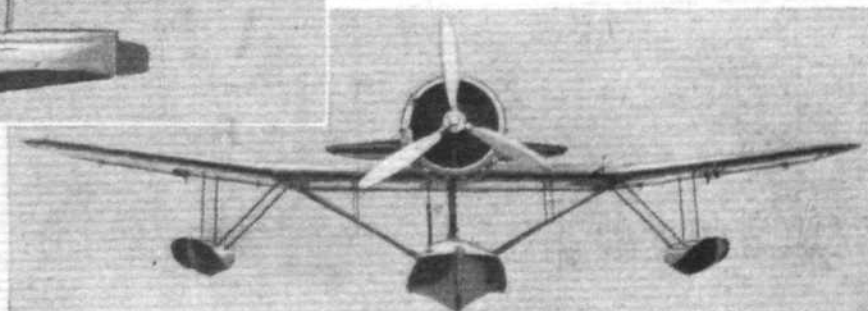
ON a recent Friday morning the De Havilland Company received a telephone message to the effect that a Leopard Moth owner, Lt. Col. Hamilton Gault, had twisted the undercarriage of his machine, splitting the main fuselage cross-member, when making a forced landing at Avignon.

From the details given the D.H. service department was able to estimate the extent of the damage; the necessary parts were collected, and an engineer caught the afternoon air service to Paris, thence proceeding by night train to Avignon. Within twenty-two hours of the receipt of the message he was on the job, and by Sunday the machine was ready to continue its journey.



The layout of the Loire 21 fleet fighter seaplane is of unusual interest. A 750 h.p. Hispano-Suiza 9 Vhrs. nine-cylinder radial (Wright Cyclone built under licence) is the power plant and drives a controllable-pitch airscrew.

A FRENCH DEPARTURE FROM THE ORTHODOX



CORRESPONDENCE

The Editor does not hold himself responsible for the opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for publication in these columns.

THE LYPNE RALLY.

[3070] May I refer you to the recent International Air Rally at Lypne? Like many readers of *Flight* I was present at Lypne on the occasion of the International Air Rally, both this year and in 1934. Throughout the Rally one could not help but notice, let alone everything else, the marked interest of the foreign visitors in the British machines and their flying evolutions. One of the most attractive features of the modern British aeroplane to the foreigner is the retractable undercarriage, and I understand that one British firm is doing good business abroad in this line.

If the British aircraft manufacturers really want a good medium for showing off their goods surely the International Air Rally at Lypne is one of the best? As yet, apart from the S.B.A.C. pageant, we have no International Aeroplane Show, and it is painfully obvious that something should be done about it pretty quickly.

Manufacturers would do well to give the 1936 International Air Rally at Lypne their whole-hearted support, and in so doing would bring all types of people together to see their aeroplanes. When travelling abroad representatives of the British aircraft industry should not find it difficult to tell their foreign friends about the forthcoming International air rally at Lypne, at which demonstrations of the latest British aircraft will be given.

In this way the Cinque Ports Flying Club, the organisers of the International Air Rally, will receive support, which it really deserves, from both at home and abroad, and the manufacturers will reap the harvest.

Lypne, Kent.

LINDSAY SHANKLAND.

HELP WANTED

[3071] Can any of the old hands kindly tell me the derivation of the word "stall" as applied to aircraft? Most other motoring and flying slang terms are self-explanatory.

London, S.W.18.

B. R.

ROYAL AERO CLUB OFFICIAL NOTICES

LIST of Private Owners.—The Royal Aero Club, with the co-operation of the associated light aeroplane clubs, has compiled a list of private owners, giving names and addresses and registration markings. Copies of the list will be issued free to those clubs which kindly assisted with information. Copies are available for sale at 10s. each at the Royal Aero Club, 119, Piccadilly, London, W.1.

Egyptian Meeting, 1936.—The Third International Egyptian Aviation Meeting will be held at Cairo on March 16-20, 1936, and valuable prizes are offered for the various contests. Free hotel accommodation will be provided for two members of the personnel of each aircraft entered. The full regulations may be obtained from the Royal Aero Club.

Air Touring Abroad.—Members are again reminded that they are exempt from landing and take-off fees, and will be given free garage for their aircraft for a period of forty-eight hours when visiting the following countries: Austria, Ger-

many, Greece, Hungary, Italy, Japan, Lithuania, Poland, Rumania, Sweden, and Yugoslavia.

To obtain these facilities members must be in possession of the F.A.I. Identity Card, and must produce it on arrival at the aerodromes of the countries specified above. The Identity Cards are provided free to members, who must apply to the Royal Aero Club, giving date and place of birth, and one passport photograph.

Negotiations are proceeding between the F.A.I. and Belgium, France, Spain and Turkey, and it is hoped we shall be able shortly to announce their agreement.

Libya (Italian Territory).—An area of 10 km. round the aerodrome of Tobruk has been prohibited. Pilots should, if possible, therefore, fly direct between El Sollum and Benghazi. Landings at Derna for re-fuelling purposes are permitted, but care must be taken in this case to circumnavigate the Tobruk area.

HAROLD E. PERRIN, Secretary.

The Lowe-Wylde Fund

BY last week-end the Lowe-Wylde Memorial Fund had reached a total in the region of £580. The latest list of donations is as follows:—

	£	s.	d.
The Cardiff Aeroplane Club	6 2 6
Mrs. H. G. Biddlesey	5 5 9
F. P. Raynham	5 0 0
Arthur Carmichael	2 2 0
Major F. Sidney Cotton	2 2 0
Major F. G. Andrea	1 1 0
Reginald Blake	1 1 0
E. C. Bowyer	1 1 0
R. A. C. Brie	1 1 0
John Josselyn, C.M.G., D.S.O., O.B.E.	1 1 0

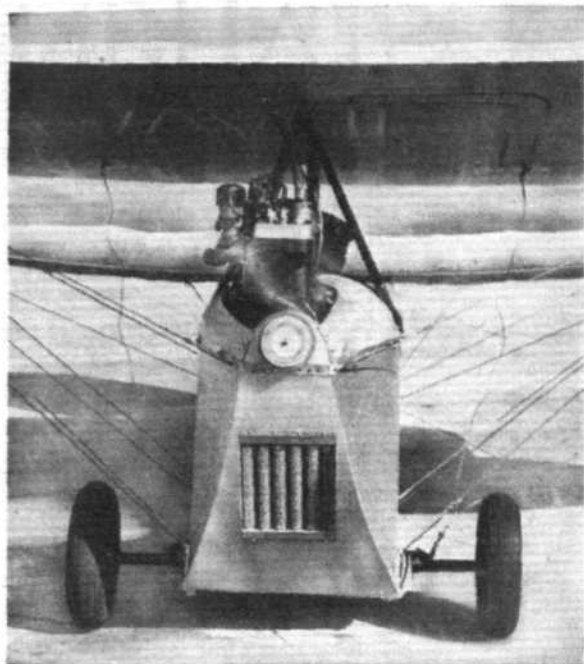
Donations should be sent to Mr. E. C. Gordon England at the London Air Park, Feltham, Middlesex.

New Equipment for India

CONTRACTS have been placed by the Government of India for hangars at aerodromes on the trans-Indian air route and on the main feeder routes. The design of these hangars has, in each case, been based on the size of the aircraft likely to use them. Accommodation is also necessary for workshops, mess rooms, offices, etc., and necessary provision has been made for all these in annexes at the back or sides of the hangars. In the larger hangars, second storeys of office accommodation have been allowed.

Steel construction is to be used throughout, and particular attention has been given to the roofing which, in hangars of large span, is a very special problem.

It is expected that the buildings will be completed within a period of one and a half years.



THE POU gets into its STRIDE

Great Improvement in Performance of Mr. S. V. Appleby's Machine as Result of Alterations

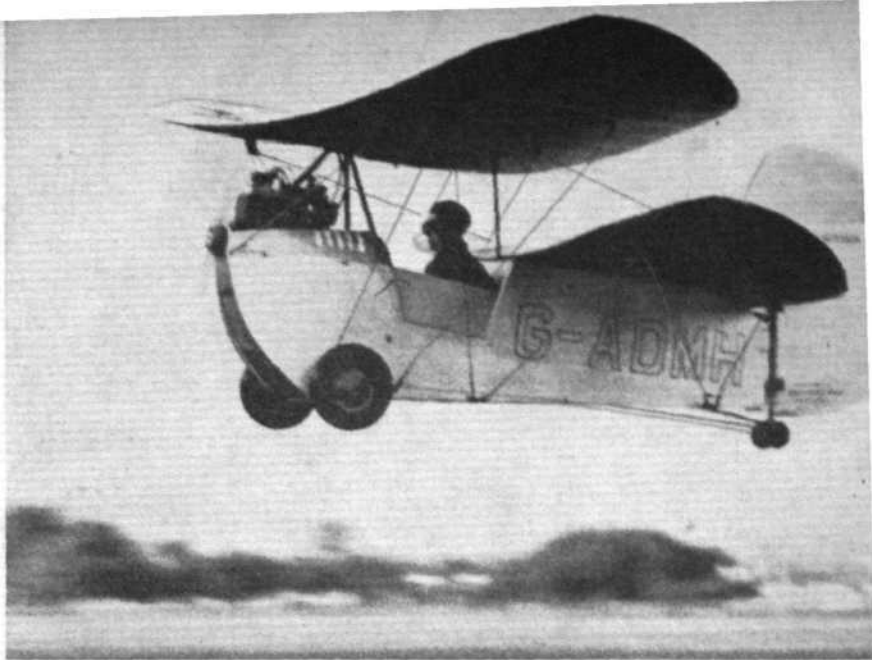
CHANGES recently made in the *Pou* originally built by Mr. S. V. Appleby at Heston, have resulted in an amazing all-round improvement.

When Mr. Appleby crashed his original machine some months ago he had a front wing of 5 metres span (16.4ft.), which reduced the rate of climb and increased the run to take off unduly. The machine was repaired and rebuilt by Abbott-Baynes, of Farnham, and a 22ft. (6.7m.) front wing fitted. More recently the radiator, which was previously suspended under the leading edge of the front wing has been abandoned, and in its place a radiator has been placed under the engine, on the curved nose of the fuselage. Not only has the pilot's view thus been improved, but the drag of the machine has been reduced considerably and the *Pou* now flies strongly with the Carden-Ford engine.

The redesigned machine now takes off in 100 yards, has a landing run of 20-25 yards, and a rate of climb of 300ft./min., at an angle of 1 in 12.

Last week Mr. Appleby flew his *Pou* for the benefit of *Flight's* photographer. The day was extremely windy, with violent gusts, but so confident had Mr. Appleby become that he did nearly vertical banks at a height of 20 to 30ft. The machine appears to handle remarkably well, and a slight shift of the front wing pivot has resulted in the trim being perfect. The machine is extremely sensitive to small changes in the position of the front wing, but in the Abbott-Baynes *Pou* a good combination of wing and c.g. position has been achieved.

As is now well known, the engine in Mr. Appleby's *Pou* is a 10 h.p. Ford, modified by Sir John V. Carden. Developing an actual 30 b.h.p., it weighs, with radiator, about 120lb. The airscrew is a small wooden two-bladed one. Arrangements have been made by Carden Aero Engines, of Heston, the company which Sir John has formed for the marketing of these engines, to put the unit on the market at an inclusive price of £60, which figure includes engine, airscrew and radiator.



(Top left) The placing of the radiator in the fuselage nose gives a much neater appearance. (Top right) This *Pou* is now a steady flier, even in gusty weather. (Centre) A side view—note how the sides of the cockpit, previously open, have been filled in. (Bottom) Mr. L. E. Baynes, of Abbott-Baynes, the firm which supplies the machine; Sir John Carden, of Carden Aero Engines, responsible for the power unit; and Mr. S. V. Appleby. (*Flight* photographs.)

Arrangements have been made for supplying *Pou* kits to amateur constructors. These kits range from an £85 one comprising all necessary materials, including engine, to the complete components ready for assembly, at £150, also including engine. Finally, for those who do not wish to build or assemble a *Pou* themselves, the completely finished machine will be available at the Abbott-Baynes factory at Farnham, Surrey, at a price of £165, "ready to fly away."

A complete list of prices has just been issued, and it is possible to buy the materials for the various main components separately if desired. Blueprints are also available.

As for the complete *Pou* with Carden engine, the essential figures are: Weight empty, 350lb.; weight loaded, 550lb.; maximum speed, 70 m.p.h.

One of the Abbott-Baynes *Pous* will be on view at the Ford Motor Show at the Albert Hall from October 17 to October 26.

STALKING

—at 9,000 ft. with a Ca
"Flight" Photographs of
Production, a Replace

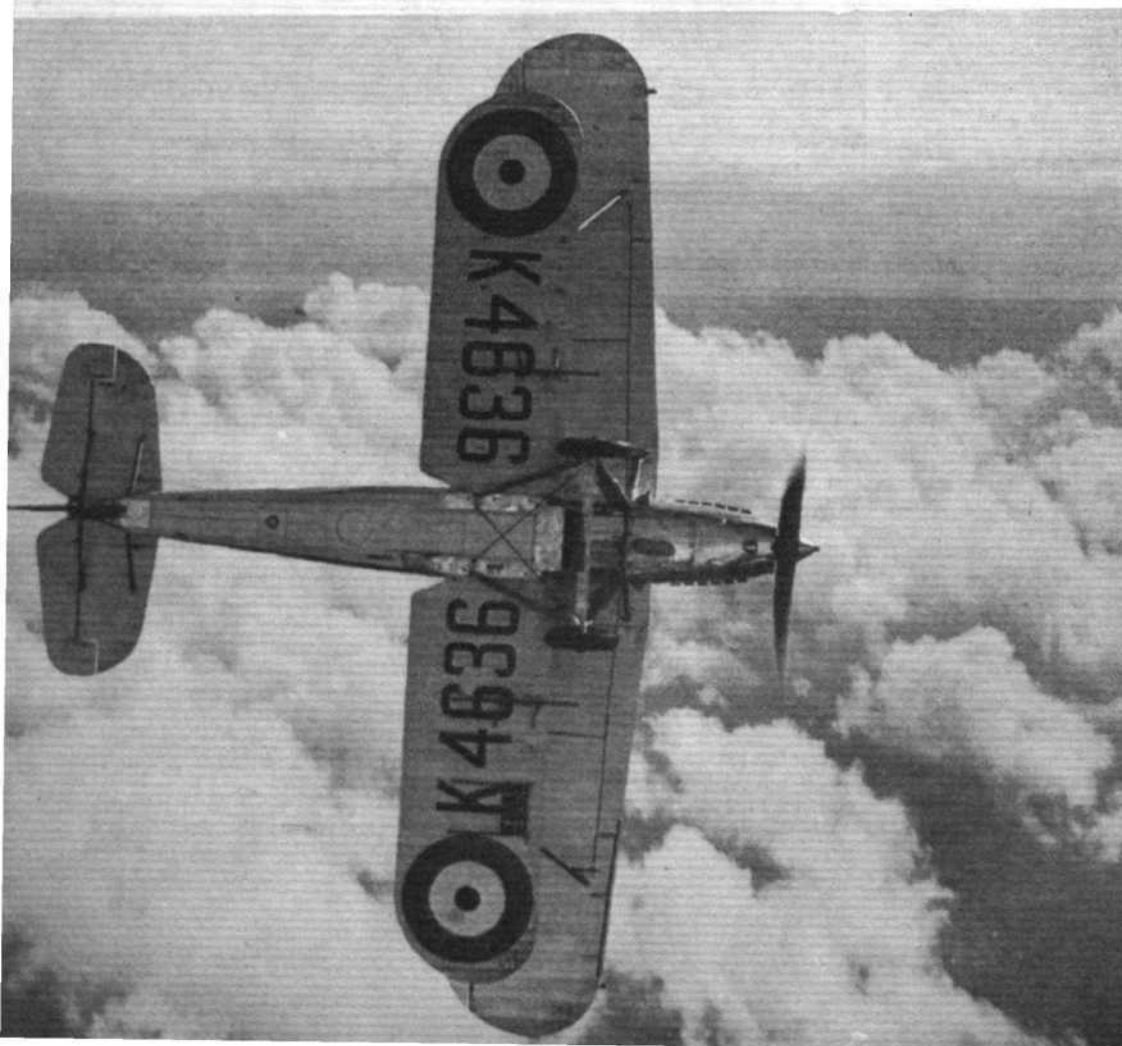
IN *Flight* of September 26, 1935, were the new Hawker Hind light bomber. The work of the two Hawker pilots, Mr. M. and Mr. J. S. Hindmarsh, who piloted the Hawker chief photographer, John Yoxall.

The upper photograph on the left shows in a dive. The tightness of the formation was so close that the whole of the machine

In the lower left-hand photograph the Hind of the plan view thus produced being shown by on each side of the lower wing tips, and by the visible on port and starboard sides. It will camera had clicked the smallest fraction of a have been entirely different.

From the large photograph on the right an in an air fight can be obtained. The Hind at close quarters, and is swinging away to get (in this instance the photographer). The away may be judged by the fact that the blurred, showing that the movement was faster. The fact that the photographer was standing stream makes this picture all the more remarkable.

The new Hind light bomber is used by the R.A.F. in such large from the earlier machine, notably b.h.p. fully supercharged Kestrel speed with full load of just under 2 gross weight is greater than that of External differences between the F wheel instead of a tail skid and in



the HIND

*Camera : Some Notable
the Latest Hawker
ment for the Hart*

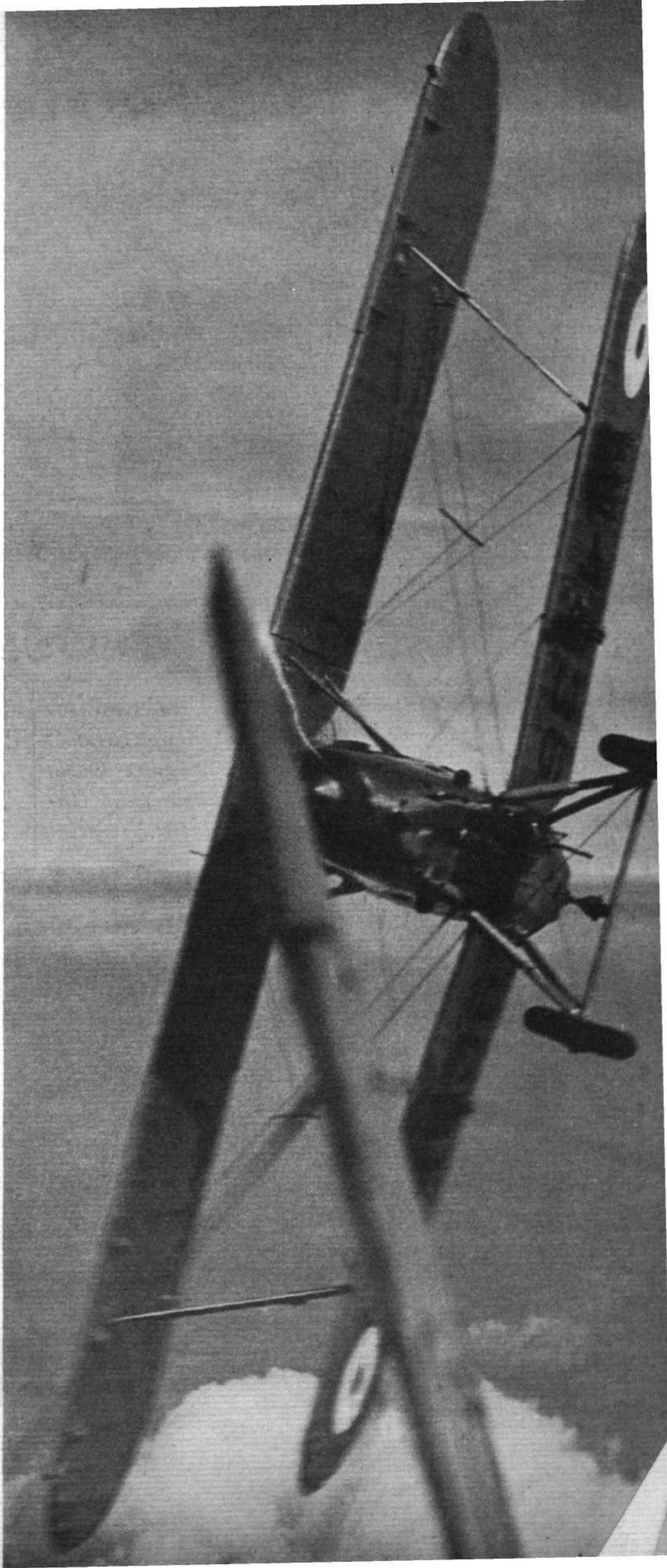
ublished the first photographs of the
very remarkable views given here show
, and bear witness to the excellent team
F. Summers, who was flying the Hind,
Hawker Hart "MR," which carried *Flight's*

the Hind "forming" with the Hart
y be judged from the fact that the Hind
ould not be included in the picture.

l is seen in a vertical bank, the exactness
y the amount of upper wing tips showing
e exactly equal lengths of exhaust stubs
e appreciated that if the shutter of the
second earlier or later, the view would

very good idea of a gunner's impression
just "attacked" the Hart from behind
clear of the fire of the Hart's rear gunner
didity with which Mr. Summers turned
arboard wings of the Hind are slightly
ough to defeat the shutter of the camera.
up in the cockpit, exposed to the slip-
table.

replacement of the Hart, which has been
numbers for several years. It differs
in having a compositely cooled 600/640
V engine, which gives it a maximum
00 m.p.h. at a height of 14,000 ft. The
f the Hart, being more than 5,000 lb.
Hart and the Hind are seen in the tail
the Demon type of rear cockpit.



d OCTOBER 10, 1935.

The new Reliant flying near Croydon: This picture was taken by a *Flight* photographer from Mr. Leslie Irvin's own Stinson.

which is not essential for actual operation has been tucked away out of sight; the immediately adjustable front seats and the wide rear seat are more comfortable than those usually found in cars; the windows can be wound down without a draught resulting; and the cabin is quiet and vibrationless even when the engine is being run at full throttle. The exterior finish is so good that the uninitiated would undoubtedly be surprised to learn that the fuselage is, in fact, fabric-covered. One could continue almost indefinitely in the description of small features which are, nevertheless, most important, but three of them might be given. In the case of all cabin machines the rearward view is necessarily poor, but a mirror-cum-ventilator in the roof can be adjusted so that either pilot at the moment of take-off may be sure that no machines are coming in to land; the main fuse is quickly removable in the event of a short in any part of the electrical installation; and the luggage locker has within a small electric light which is automatically switched on when the outside door is opened. Light luggage, incidentally, can be carried beneath or behind the rear seats.

FOR the FASTIDIOUS

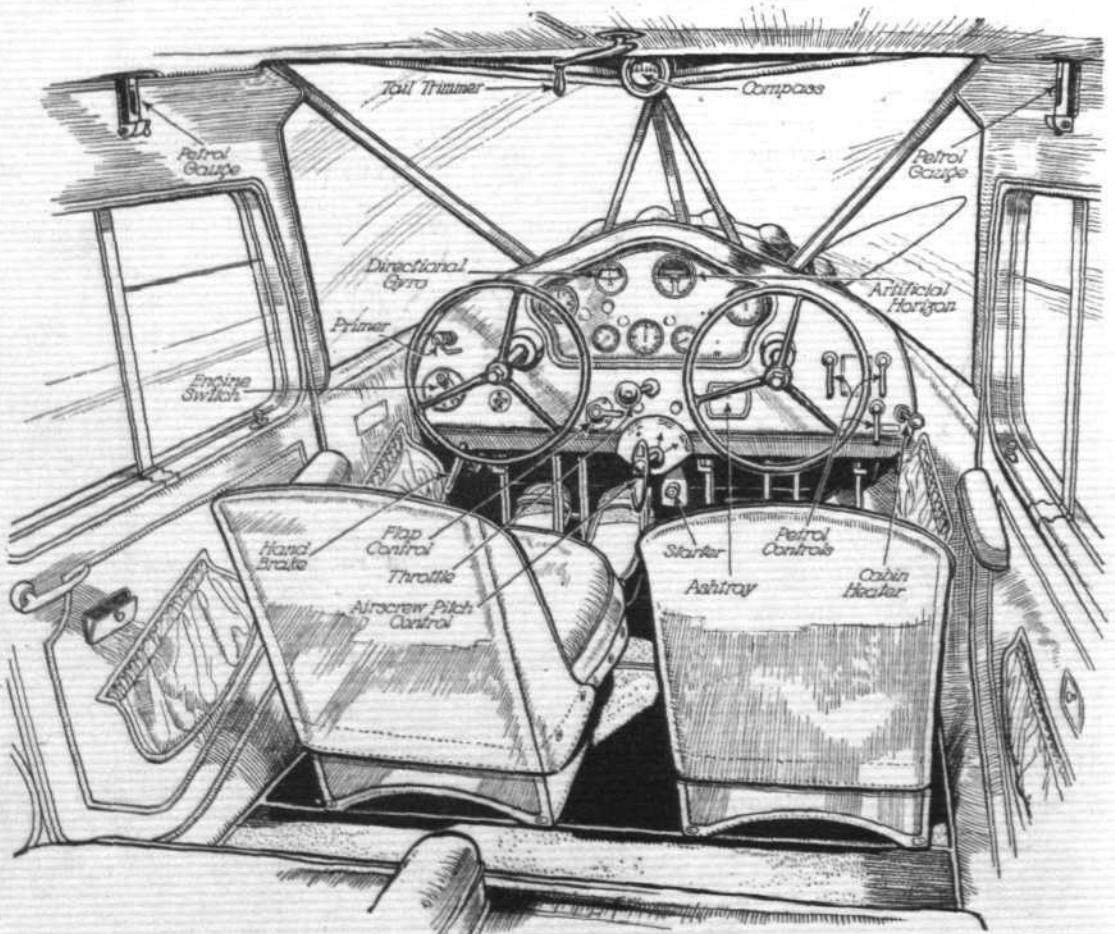
IT has always been maintained by *Flight* that an aeroplane designed expressly for the private owner should be not only easily handled, but finished, both inside and outside, in a style comparable with that of a good car. Solid fittings and familiar layouts will do more to make the new passenger at home in the air than anything else, and the aircraft manufacturers have not even yet tapped the prospective, but still largely uneducated, "luxury" market.

The new Stinson Reliant, which is being handled in this country by Brian Allen Aviation, Ltd., of Croydon, has just that appearance of solidity and familiar comfort which calms the timid and is, withal, a comparatively simple machine in its handling. The word "comparatively" is deliberately used, inasmuch as no aeroplane is yet, or is likely to be, completely foolproof. There are levers and switches to move and distances to be gauged when driving the most modern of easy-to-drive cars. Flaps have been fitted to simplify the handling of an already easily handled machine with an ordinary performance, rather than to make a very clean machine less difficult for the ordinary pilot.

Every piece of mechanism

Comfort and convenience have been carefully studied in the planning of the Reliant's cabin. The instrument panel mounting is shockproof.

In the Air with the Latest Stinson Reliant: A Four-seater Cabin Monoplane with Unusual Refinements



The 1935 model Stinson Reliant may be regarded as a development, by way of the 1933 and 1934 Reliants, of the Stinson "R," which, like the Reliant, has frequently been seen in this country. Welded steel tubular construction with fabric covering is employed for the fuselage, whereas the fabric-covered wings have solid spruce spars and metal ribs. The section is Clark Y. Metal construction is used for the pneumatically operated flaps. An undercarriage of the split divided type is used, each leg of which is hinged to a stub extending from the fuselage, with Aerol shock absorbers, low-pressure tyres and hydraulic brakes.

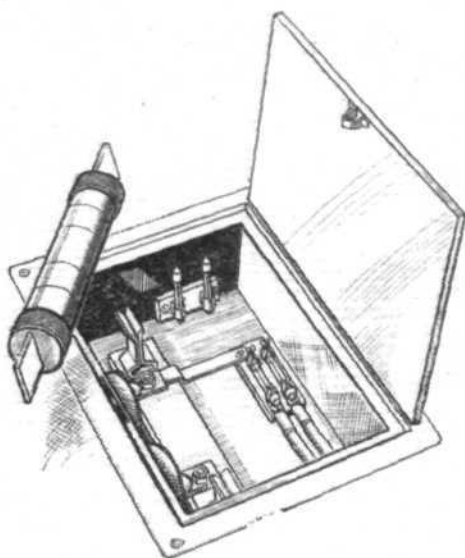
The 1935 model has a slightly longer nose than its predecessors, its fuselage is rather more rounded, and the wing tips are "washed out." A 225 h.p. Lycoming R-680-4 radial is fitted as standard, and is housed in a full, quickly detachable N.A.C.A. cowl with scalloping for the valve gear. Either a Hamilton Standard or a Lycoming-Smith controllable-pitch airscrew may be used, though the actual machine was fitted with the latter.

The new machine has control columns which protrude through the instrument panel, displacing the older Y-type and allowing more room for the pilot and the passenger or second pilot.

The addition of a c.p. airscrew control to those already in use on a normal aeroplane might be frowned upon by the uninitiated, but, in fact, as a short flying trial proved, the operation of this control is simplicity itself, and any effort is amply repaid by an improved take-off. The Smith airscrew can be adjusted to suit the speed of climb to the best engine revolution, and it is only necessary to remember to "change down" to fine pitch during the approach to an aerodrome in readiness for another take-off.

In both flying and taxiing attitude the view from the pilot's seat is extremely good; at cruising speeds the top of the engine cowl is quite a long way below the horizon level and the glide, even with the flaps up, is sufficiently steep to ensure a good view of an aerodrome or field.

Provided that conditions are not too rough the Reliant will fly at cruising revolutions hands-off and feet-off at the same time, and will turn accurately on the rudder alone.



A master fuse is placed so that it can be immediately reached while in flight and its removal cuts out the very full electrical equipment of the Reliant.

Gentle work with the rudder will bring it out of a turn and into one in the other direction without appreciable sideslip, the reversal of turn taking place with almost entire accuracy. Both rudder and aileron controls are light, while the fore-and-aft control is sufficiently heavy to prevent any of that accidental pitching which is so uncomfortable for passengers. It is, perhaps, a little unfair to criticise a feature to which one would undoubtedly become accustomed, but the tail-trimming handle in the roof appeared to be awkwardly placed and is rather too low geared for rapid work in an emergency. Although it would not be impossible to hold the nose up in a glide without altering the trim the effort is quite considerable and is impossible to exercise with one hand while half-turned in the seat. In a comparatively large machine the tail-trimming gear is an essential and should be both quickly and easily operated.

It would be difficult to imagine that anyone could misjudge his approach with flaps as effective and as quickly applied as those on the new Reliant.

After closing the throttle the tail trimmer is wound until the speed is down to 80 m.p.h. or so, at which the glide is quite steep. As the aerodrome boundary is approached a little high the movement of a switch on the dashboard brings down the flaps, which have a strong and personally felt braking effect, and the nose automatically drops. At the slightest suggestion of undershooting the flaps can be momentarily switched up again, while a little distance is gained. With the flaps down and the air speed below 60 m.p.h. the angle of descent is extremely steep, and the flaps can, if a hurried descent is necessary, be put down at speeds as high as 120 m.p.h. without straining the structure. In the event of engine failure the accumulated depression in the vacuum tank is sufficient for three or four movements.

On the ground the Bendix brakes can be applied hard without the slightest suspicion of tail-lifting, and the undercarriage is flexible and well damped. The differential braking effect for taxiing is obtained by two heel pedals which are moved independently of the hanging rudder pedals.

The dimensions, loadings and performance figures for the de luxe model Stinson Reliant are given on page 390.



The Reliant coming in to land at Croydon with the pneumatically operated flaps, which are the most effective of air brakes, in the "down" position. (Flight photograph.)

Private Flying



Topics of the Day

Approach Problems

IT would probably not be an exaggeration to say that every pilot, in the first hundred hours of his flying life, looks on a clean, engineless approach to a small or large aerodrome as the most difficult of feats. He may not be consciously worried by the business, but he cannot make a neat approach with the same carefree abandon with which he may execute loops or flick rolls.

He first sighs with relief when he has crossed the boundary at the right height and air speed, and he sighs again, but less loudly, when he feels that the machine is firmly on the ground. A good landing becomes a mere habit of feeling and reaction, but a good approach needs to be thought out in relation to wind speed, boundary obstructions, and the presence of other machines. Yet what, so far, have our designers really done to simplify this complicated process?

The Crude Sideslip

UNTIL the arrival of the perfect aeroplane, which will be fully controllable at the stall and which will have an undercarriage capable of absorbing the shock of a fully stalled descent, we must be content with enormously effective and quickly operated flaps or air brakes.

For a long time flaps have been imagined as necessary only for very clean machines with the flattest of approach paths, yet the need for a flight path that is controllable without the use of the engine is almost equally great for all machines. It is particularly necessary in the case of types which are used by those novices who are staid enough to look upon the sideslip as a fearsomely unnatural manoeuvre.

If we were not so accustomed to the business of slipping alternately to the right and left, while screwing an anxious eye at the rapidly approaching boundary fence, we should think of it only as a lunatic device for the delectation of Roman multitudes on holiday. You and I may consider the sideslip to be quite an amusing affair, but not everybody, and as a standard method of losing height quickly it is nothing if not crude.

Real Air Brakes

EVERYONE wants air brakes which are so effective that the machine can, if necessary, be "pointed" at the spot on which one wishes to land and so easy to operate that they can be adjusted immediately to keep the air speed constant at any reasonable angle.

The pilot would then treat his flap handle just as he treats the brake lever of a car on which the foot brake is feeble. The control might even, as in the case of one of the new American "simplified" aeroplanes, be interconnected with the throttle, so that the whole range of speed or descent is adjustable by means of a single lever.

On a base of sheer effectiveness the pneumatically operated flaps on the new Stinson Reliant are good. Although they must be either fully down or fully up the action takes only a few seconds and the effort of operation is not borne by the pilot's own muscles. He merely moves a switch and the supply of "vacuum," even with a dead engine, will suffice for two or three movements—which should be ample for the most inaccurate "rumblings" during a forced landing, especially as the normal gliding angle is comfortably coarse and the flapped gliding angle is very steep indeed.

To the uninitiated it might be imagined that a flat approach is quite as easy to judge as a steep one, but a little thought will show that this is far from being the case. Apart from the fact that the objects by which one judges a correct cut-off point for different conditions are much farther away, the relative effect on the approach path of, for instance, an unexpectedly strong wind is much greater.

Whenever I am lucky enough to travel in the pilot's cockpit of a clean commercial type I am nearly always impressed beyond measure by the parade ground handling of the approach. Yet only recently I was flying with a most experienced pilot in a type which was unfamiliar to him, and his first approach was every bit as ragged as any novice's. His second approach, of course, was perfect.

Instruction in Comfort

MOST amateur pilots and all club instructors will be interested to learn how pupils fare in the first D.H. Hornet Moth to be put into use by a school—in this case the London Aeroplane Club. In spite of the fact that side-by-side-seater training machines have been in satisfactory use now for a number of years, none has been designed to provide quite the same instructional comfort or, perhaps, to be quite so simple in operation.

There are diverse opinions concerning the moral effect of performing one's first bounce landings in a bowler hat with a similarly garbed instructor immediately beside one. Certainly on a first solo the nervous pupil will be more noticeably lonely than in a machine where the only changes concern the departure of a dark round patch—the instructor's head—and the failure to obtain replies to questions. As some pupils can never obtain well-fitting hats the last change is not usually noticed.

A few months ago I was out at Hatfield when a certain air-line operator, who had flown in machines a great deal but who had never actually learnt to fly, was given a few rounds in a Hornet. His first and second landings were rather poor, but his third, apparently, was quite fair, and he required very little help on any of them. In any case, he was in sole charge of the throttle, the air brakes and the tail trimming lever, which could only have been reached by the pilot with difficulty.

INDICATOR.

FROM the CLUBS

Events and Activity at the Clubs and Schools

LEEMING

A Hornet Moth has been demonstrated to various pupils by Rollasons Aircraft Services.

Mr. Currey has passed the cross-country test for his "B" licence and a first solo has been made by Miss Weston Adamson. Messrs. Henderson and Shand have become pupils.

MIDLAND

A successful first solo has been made by Mr. E. Sturman. Mrs. K. Mitchell and Messrs. J. Rees, H. Sawdon, C. Mitchell, E. Beale and C. Ginder have become members, the first four in the flying category.

Last week club machines flew 23 hr. 45 min. dual, and 11 hr. 25 min. solo.

HESTON

Weather has interfered with the Airwork flying school to a great extent this week, but three new "A" licences have been applied for in the names of Mr. H. P. Baylis, Mr. W. W. Lawrence, and Mr. P. R. C. Morgan. Mr. Gilbert Miller, the lessee of the St. James's Theatre, who does most of his travelling by air line, has made his first solo flight.

LONDON

The weather has curbed flying activities lately, but 75 hr. 45 min. were put in last week. First solos were made by Messrs. S. K. Arnold and T. A. Evans-Freke. Messrs. N. E. D. Hurst, J. G. Hopcraft and H. J. Blackshaw completed their "A" licence tests.

The map reading competition, which was flown off last week-end, was won by Mr. J. A. Auping with Mrs. Crossley and Mr. F. J. Bush as runners-up.

BRISTOL

Last Saturday evening the Bristol and Wessex Aeroplane Club gave a sherry party and an informal dance in the clubhouse. About ninety members turned up. During the afternoon thirty couples took part in a treasure hunt.

From 7.30 to 10.30 p.m. on the same day Mr. E. M. H. Slade, the Club instructor, was kept busy giving dual instruction in night flying on the Cadet. A Western Airways Dragon, flown by Mr. R. Barrett, made six night trips over Bristol with full loads of passengers.

NORFOLK AND NORWICH

Next week-end the competition for the President's Trophy will be held. It will take the form of a cross-country race and is open to all pilots who have passed their forced landing and cross-country tests. Passengers will be allowed, provided these are not the holders of an "A" licence. The maximum engine revolutions allowed will be 1,850, and pilots will not be permitted to fly below 500 ft. A barograph will be carried by each machine, and marks will be allotted for a level trace.

WITNEY AND OXFORD

The works (Universal Aircraft Services, Ltd.) were kept busy during September with repairs of C. of A. work; the Club is preparing its winter programme of entertainment.

In face of bad weather 28 hr. flying was done during the fortnight ending October 5. Mr. George Howard-Davies went solo, and the Hon. Charles Dutton and Mr. C. L. Harrison renewed their "A" licences. New members included Miss Margaret E. Pritchard, J. J. Griffin and A. Maitland Enimet.

C.A.S.C.

On Sunday, August 29, the weather allowed only two members to fly: 1 hr. 5 min. flying was recorded. Last Sunday, however, ten members put in 1 hr. 50 min. solo, and 4 hr. 45 min. dual. Marshall's new Moth ("BPJ") was much in evidence.

READING

Mr. C. Powis and Flt. Lt. "Tommy" Rose have returned from their Continental tour. They did big business in Central Europe.

Mr. K. Russell and Mr. C. G. Bennett have qualified for their "A" licences. Flying time last week was 50 hr. 30 min.

ABERDEEN

Of the 36 hr. flying logged during September, 19 hr. 50 min. was done by private owners; the weather was not conducive to flying.

Messrs. W. Ross and C. Christien have become pupils. A Gipsy I Moth with complete blind-flying equipment has been added to the school's instructional fleet.

HANWORTH

The Hendy Heck in which Mr. Llewellyn and Mrs. Wyndham are to attempt a record flight to the Cape, arrived on Thursday. This machine now has a "trousered" undercarriage.

Mr. Jarman has gone solo, and Messrs. Barmby, Jones and Siling have become members. Flying times last week totalled 35 hr. 30 min.

TOLLERTON

Last Saturday and Sunday a "skeleton map" cross-country race was flown. Mr. G. G. Thorpe was victorious, and Messrs. Hutchinson and Richardson gained second and third prizes respectively.

Sir Thomas Shipstone has presented the Club with a very handsome silver cup which will be competed for in the near future.

Last week, during which Mr. G. W. Marshall became a member, 31 hr. flying was logged.

LEICESTERSHIRE

Flt. Lt. G. N. P. Stringer, R.A.F.O., terminated his engagement with the Club as chief instructor on September 30, and was succeeded by Flt. Lt. R. L. Bateman, R.A.F.O.

Flying time for September was 79 hr. 10 min. First solos were made by G. W. Clarke, C. R. Frears and R. Lillie, and A. C. Phillips, A. A. Gordon-Cranmer and C. R. Frears obtained their "A" licences. W. B. Beale made his first solo night flight.

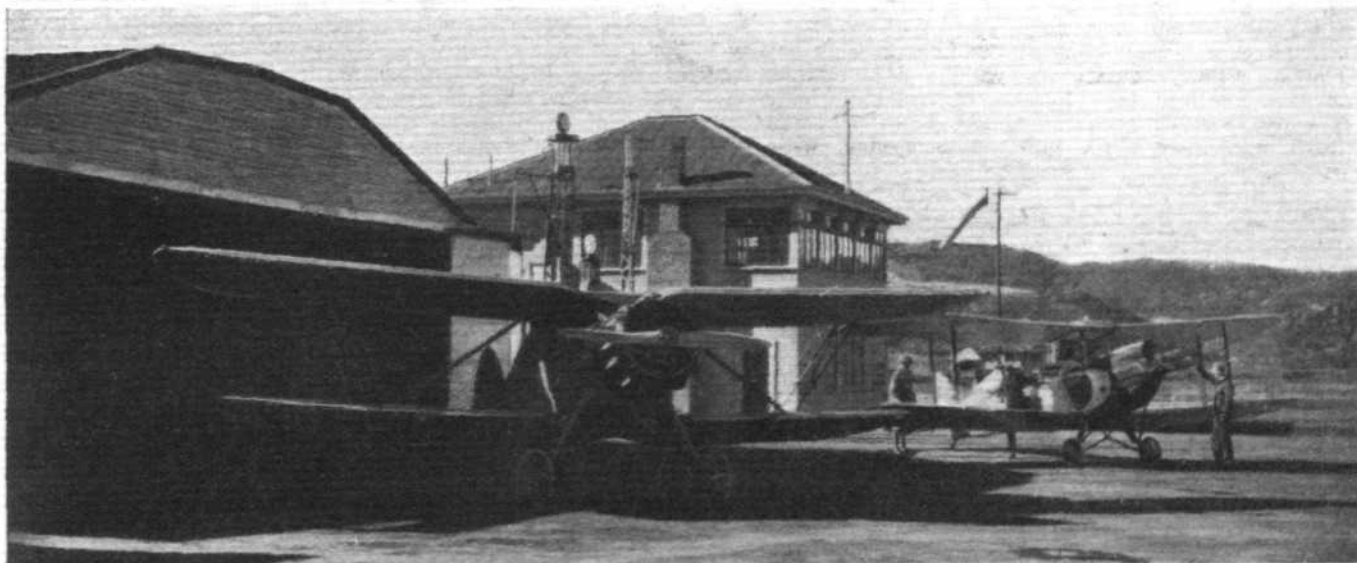
Members of the Leicestershire Car Club were entertained to tea on Sunday, September 29.

YORKSHIRE (YEADON)

Mr. E. J. Joblin-Purser has joined the Yorkshire Aeroplane Club as a country member and Mr. H. Priestly has enrolled as an honorary member in connection with his flying training under the Young Pilots' Fund.

Mr. G. Calam and Mr. E. W. Hustler—both Aviation Group members—have gone solo. Tests for the "A" licence have been passed by Mr. C. Busfield (Young Pilots' Fund pupil) and Mr. P. M. Wood (Aviation Group member).

Club machines flew 17 hr. 15 min. last week. The total for September was 108 hr. 15 min.



IN NEW ZEALAND: The Wellington Aero Club's Waco cabin machine and Gipsy Moth on the tarmac at Rongotai aerodrome.

Private Flying

YORKSHIRE GLIDING

With the year ending July 31, 1935, the Club completes the fifth year of its existence, and its first year at Sutton Bank. Membership has increased by 60 per cent., and the number of fully qualified "C" certificate pilots by about 80 per cent.

NORTHAMPTONSHIRE

The mystery car party held last Saturday week was a great success.

Last Sunday was a perfect day, and flying members and private owners turned up in force. Mr. Geoffrey Linnell was flying his new Hornet Moth which, naturally, was the centre of attraction.

Mr. B. V. Jessop became an associate member last week.

SOUTH COAST

Flying hours exceeded twenty-five last week. Sir George Lewis made his first solo, and "A" licences were obtained by Miss Spiller and Mr. Myers. Miss Spiller, in fact, was the first member to get her "A" with the Club, having completed her test on Saturday half-an-hour before Mr. Myers.

New members, in addition to Sir George Lewis, are Mrs. Gale and Messrs. Colman-Cohen, Boutal, Hagger, Collier, Tingley, Nye and May.

The fine weather on Saturday caused a rush on the machines. Brooklands rose to the occasion with an extra machine.

LEAMINGTON

The Leamington, Warwick and District Club, which has its aerodrome at Harbury Road, near Leamington Spa, is equipped with two Gipsy Moths. Flying charges are: Dual £2 per hour, and solo 35s. per hour. There is no entrance fee, but the annual Club subscription for a flying member is three guineas, and that for an associate member two guineas.

In face of bad weather one Moth (the other was undergoing C. of A.) flew 39½ hr. last month. At the end of September membership stood at 105.

Mr. M. Ashford has become a member, and first solos have been made by Messrs. W. R. Boroughs, A. R. Senior and A. L. Chambers.

CINQUE PORTS

Horatius, inward bound for Croydon, landed from Brussels recently to refuel.

Flt. Lt. J. G. D. Armour, in an Eagle, returned from Paris and cleared outwards for the Continent again on Saturday; his ultimate destination is said to be Cairo. The demonstration Hornet Moth has also cleared outwards.

Mr. J. A. M. Henderson flew down to Lympne last Sunday in his new Hornet. M. Provost, a former Belgian war-time pilot who took his "A" licence at Lympne, now owns a Leopard and visited the club on Sunday from Ostend.

The first of the winter dances will be held on Friday, October 18, at the Leas Cliff Hall, Folkestone.

Flying time last week amounted to 52 hr. New flying members are Messrs. W. G. D. Stanton and H. A. Clarke.

Hornet Moth Instruction

THE London Aeroplane Club has now taken delivery of the first of the two D.H. Hornet Moths which have been ordered by them. It will be interesting to learn how, in particular, *ab initio* pupils perform in this side-by-side seater cabin type. Judging from various experiences of which we have heard, absolute newcomers should find themselves ready for solo in a surprisingly short time.

During the past year flying at the London Club has averaged about seventy hours every week, and more than forty pilots have obtained their licences at Hatfield. The club fleet, which consists of Tiger Moths, Moth Majors, Gipsy Moths, and a Puss Moth, now numbers nine, with three instructors.

Book Review

An Elementary Course of Air Navigation. By Flt. Lt. C. W. Hewitt. (John Hamilton, Ltd., 3s. 6d.)

It would be extremely difficult to deal with every subject connected with air navigation adequately in the extent of a single volume, but Flt. Lt. Hewitt covers at least the essentials of everything from map reading to meteorology. Aspiring pilots should find his book extremely useful in covering the groundwork before passing on to erudite expositions of some of the more complex subjects.

Although primarily written for the absolute novice, there must be a number of experienced pilots who, short of studying for their navigators' licences, have never had reason to worry about many of the basic facts which are explained by the author. Several of the better-known "memory assisters" concerning, for instance, magnetic variation, compass deviation, and port and starboard lights are given, as well as such information as that concerning the use of a C.D.C. Rather

REDHILL

Three more blind flying certificates were gained by members last week. Mr. S. Darby went solo, and two new members joined. Flying time was 46 hr. 55 min.

LIVERPOOL.

The total flying time for September was 164 hr. 30 min., and that recorded this year, up to September 30, 2,079 hr. 40 min. Last week 60 hr. 15 min. flying was logged.

ROYAL AIR FORCE

Members have been making good use of the fleet of four machines now operating with the Club.

F/O. E. Rotherham recently became a member.

BROCKLANDS

Flying time was surprisingly high last week in view of the discouraging weather.

Lord Forbes accomplished an excellent first solo, and Mr. Compton obtained his "A" licence.

Mr. Rimmer has commenced a blind flying course, and Mr. Dudley Froy, the racing motorist, has joined the Club.

CAMBRIDGE

Although last week's flying time (25 hr.) was still on the low side, there was a slight improvement over the previous week during which weather held up nearly all instructional flying.

It has been decided to paint all the Club machines in a uniform colour scheme of aluminium and light blue. Up to now they have been of varying hues, and although this is very useful for distinguishing them in the air, it is felt that it will be smarter to have them all "of a feather."

COTSWOLD

September saw flying activities greatly handicapped because of a major overhaul of the Club's machine. Actually the figure for flying time was 44 hr. 10 min.

Mr. C. W. Slatter took his "A" licence, and Messrs. Macleod-Carey and Swain became members.

The Club has acquired a B.A. Swallow, G-ADPS, which will be available for dual and solo flying.

Messrs. Northway, Lane and Fielding took the Desoutter on a cross-country to Lewes recently. On the return trip engine trouble developed, and Mr. Northway had to put the machine down in the only possible field for miles around. The next day Mr. R. O. Shuttleworth flew down in his own Desoutter with spares and the engine was repaired on the spot, allowing the machine to be flown back to the Club on the same day.

A landing competition was held on Sunday, September 29. It entailed three approaches and landings from 1,000 ft., the winner being Mr. E. Goddard. Messrs. Dredge and Barlow were second and third respectively. It has been decided to run some event of this kind once every month for club-trained pilots.

more details than one might expect are given of the causes of various weather conditions which, we have always considered, are not sufficiently well known to amateur pilots.

The only useful criticism which can be levelled at the method in which the various subjects are dealt with concerns the chapter on practical air pilotage. This might usefully have been expanded, inasmuch as all the theoretical knowledge in the world is usually blown out of one's brain on a first cross-country flight, and any navigational problems can then only be solved by simple methods which have already been well memorised. Most people, for instance, cannot easily remember how to correct a course in relation to the compass without careful and consecutive thinking while the machine flies farther and farther from the true track.

The New Reliant

BELOW are the figures for the 1935 Stinson Reliant with a 225 h.p. Lycoming R-680-4 engine and Smith c.p. airscrew, a description and flying impression of which appears on pp. 386d and 387.

DIMENSIONS	
Span ...	41ft.
Length ...	26ft. 10in.
Height ...	8ft. 5in.
Wing area ...	230 sq. ft.
Chord ...	80in.
WEIGHTS AND LOADINGS	
Weight empty ...	2,330 lb.
Disposable load ...	1,220 lb.
Gross weight ...	3,550 lb.
Wing loading ...	15.4 lb./sq. ft.
Power loading ...	15.8 lb./h.p.
PERFORMANCE	
Cruising speed ...	130 m.p.h.
Initial rate of climb ...	800 ft./min.
Service ceiling ...	15,200ft.
Range ...	500 miles.
Price ...	£2,050.
Agents: Brian Allen Aviation, Ltd., Airport of London, Croydon, Surrey	

A VEE-TWIN REVIVAL

*Air-cooled British Anzani Engine of
1,100 c.c. Capacity : 34 b.h.p. at
3,500 r.p.m. : An Attractive Unit
for the "Pou"*

AMONG the engines produced for installation in ultra-light aircraft when the "craze" for these machines was at its height some years after the war, was the little 1,100 c.c. vee-twin British Anzani. A Hawker Cygnet with one of these units gained first place in the international Handicap event at Lympne in August, 1925.

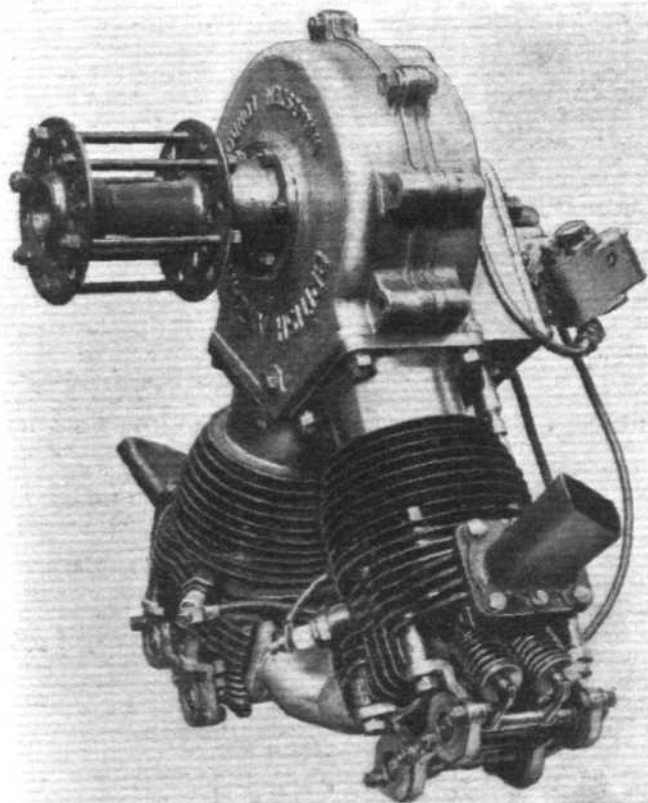
The manufacturers have decided to revive the engine, and a batch is now being produced at their Kingston works. Already several examples have been sent out to Morocco for use in machines of the Pou du Ciel type. The direct-drive version is to be marketed at £45, reduction gear costing £5 extra.

For installation in the "Pou" the engine will normally be produced as an inverted type. Its two air-cooled cylinders measure 83 mm. in bore, and have a 101.5 mm. stroke. They are of close-grain iron and are set at an angle of 57 deg. The heads are detachable and have copper joints; aero cylinder iron is now being used for their construction, to facilitate cooling.

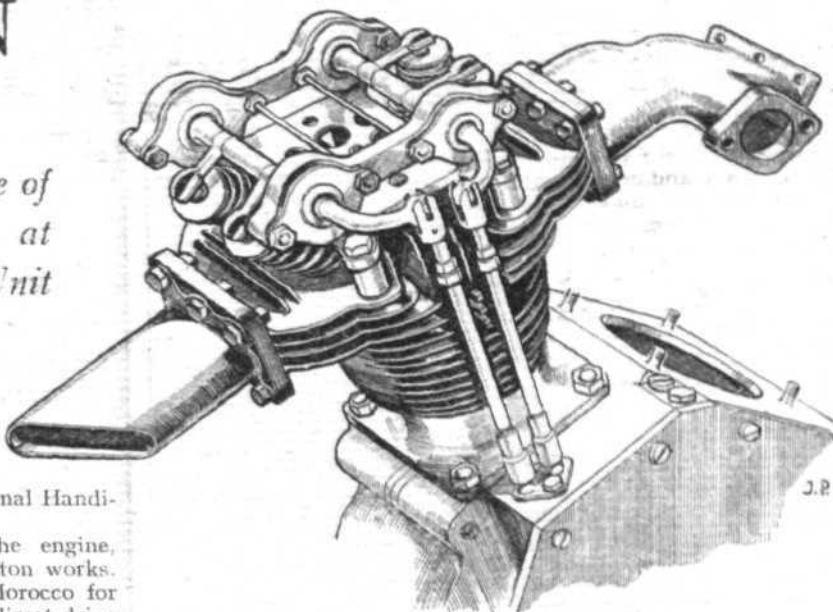
Generous Bearings

A built-up crankshaft is used, being counter-weighted and having specially lightened flywheels. Ball and roller bearings are provided for the main journals, a four-row roller bearing for the big end, and a suitable ball thrust to take the thrust of the airscrew.

The camshaft has detachable cams with large wearing surfaces and operates the tappets through the medium of hardened steel rollers.



Normally, the engine is mounted inverted. This view shows the direct-drive model. (Flight photograph.)

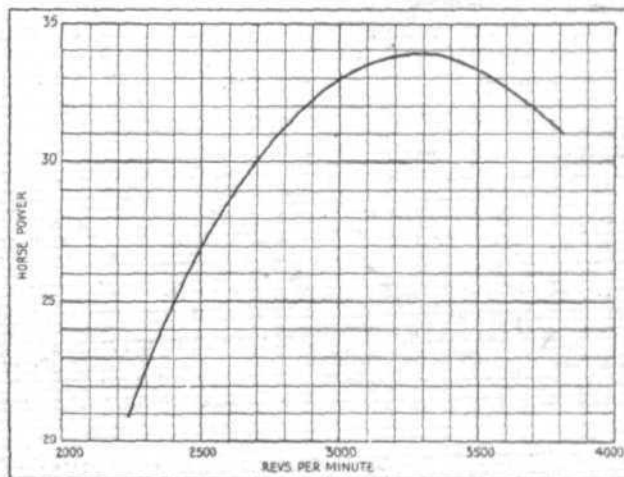


Two inlet and two exhaust valves are provided for each cylinder. The valve rockers are mounted on ball bearings.

Die-cast aluminium alloy is used for the pistons, which have four rings and an oil scraper groove each. The gudgeon pins are hollow and are of the floating type, with brass end caps. High tensile steel is used for the H-section connecting rods.

Two inlet and two exhaust valves are provided in each cylinder. They are operated by push-rods and double-arm rockers running in grease-retaining ball bearings.

Lubrication is effected by a mechanical pump driven by the magneto shaft and supplying oil from a separate tank.



The power curve of the 1,100 c.c. British Anzani.

The crank case is of specially toughened die-cast aluminium and is fitted with suitable lugs and bolt holes for attachment to the mounting. It is claimed by the manufacturers that installation in a machine such as the "Pou" is exceptionally simple, due to the radial crank case.

Mounted on a platform at the side of the timing case is a Lucas magneto, driven by enclosed bevel gear from the camshaft. The carburetter in the new version is an Amal light alloy type.

At maximum r.p.m. (3,500) the engine delivers 34 b.h.p. Cruising revolutions are 2,500, at which speed 25/26 b.h.p. is obtained. The weight of the direct-drive version, complete with magneto, carburetter and oil pump, is 99lb. Reduction gearing of the straight spur type is available, and, should this be fitted, the weight rises by 20lb. A neat hub for a metal airscrew has been designed.

The makers are the British Anzani Engineering Co., Ltd., whose works are in London Road, Kingston-on-Thames.

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —



A REPLACEMENT : For eight years the old Fairchild 71's have been doing yeoman service in Canada. Now an improved type has been produced for the Canadian market—a direct development of the 71. It has a Wasp T1D1 engine, can be employed as landplane or seaplane, and has a top speed, in the former guise, of 150 m.p.h., with 2,940 lb. of disposable load.

THE WEEK AT CROYDON

Winter Time-tables and Night Flying : New Services : The Weather Board

THE start of Winter Time saw alterations to many services, including those of Imperial Airways and K.L.M. The former company is now operating three Paris services each way daily, leaving Croydon at 0900 hrs., 1230 hrs., and 1900 hrs. The last of these is a night service all the way, and it will be an impressive sight each evening to see the gleaming silver *Heracles* or *Scylla*, lit by the glare of the tarmac arc lamps, embarking passengers who propose to dine between London and Paris. The Imperial London-Budapest and London-Brindisi services will, as reported elsewhere, run throughout the winter. The explanation of the rather odd time-tables appears to be that indifferent though night flying facilities are in England, they are better than at the other ends of these routes.

Swissair, it is reported, will fly between Zurich, Basle, and Paris during the winter, but not to London. A connection will probably be made between Paris and London and vice versa by Imperial Airways or Air France, so that the link will still be maintained.

Air France, as reported in *Flight* last week, has been obliged to suspend the excellent Croydon-Cannes air link. We have suffered the same sort of thing here. Municipalities, unwilling to provide decent airports, bewail their fate because companies cannot run to their city with safety. In shipping circles it is usual to provide an adequate harbour before expecting boats.

Crilly Airways opened Bristol-Croydon and Norwich-Croydon lines during last week. It is said that this company has reached an agreement with the Portuguese Government to operate a line between London, Nantes, and Lisbon, and that Portuguese mails to a considerable daily load have been guaranteed.

British Continental Airways have announced the opening of several new services in the very near future. One line is between Croydon and Brussels, another between Croydon and Lille, and a third between Croydon, Antwerp, and Amsterdam. Permission to fly to Holland has just been granted.

It is something of a feather in the cap of Surrey Flying Services that two such people as Jock Bonar and Bill Ledlie should have taken their instrument flying courses with that firm. "Surreys," by the way, were one of the first companies to be approved for this purpose by the Air Ministry. A number of notabilities passed through the Airport last week,

including, of course, Messrs. Campbell Black and McArthur from Khartoum by Imperial Airways.

Considerable activity is being displayed in the main hall, where the huge weather reporting board, which has been for years a fascinating but insoluble puzzle to visitors, and too elementary to be much use to pilots, is being removed. Whether the space between two pillars will be left clear or whether the central kiosk for newspapers will be abolished in favour of a small shop in the new position is not yet decided. At all events, there will be more room.

All-weather Swans

During Q.B.I. conditions last week, when clouds were almost on the surface, the Imperial Airways stand-by pilot was summoned to the control tower to witness the arrival and departure of two strange aircraft which were said to be British. They were swans, one of which landed after shocking the officer on duty by making a right-hand circuit. Having landed on the tarmac, it walked (or should one say taxied?) to the petrol filling pumps and then took off. Its mate, full of confidence after, presumably, a blind-flying course, flew into the clouds.

Interesting though the incident may be to naturalists, it is not amusing to meet a full-grown swan when flying blind.

Olley Air Service had a machine waiting at Hanworth for Steve Donaghue at the time when he fell and was injured at Kempton Park. The idea was to have flown to Paris via Croydon in time to ride in another race.

Among French events which always cause a jump in cross-Channel airline bookings is the Paris Motor Show, and, incidentally, I understand that *Flight's* associated journals, *The Autocar*, *The Motor Cycle*, and *Motor Transport*, made extensive use of Imperial Airways' Paris services in connection with the Show.

Imperial Airways' Swimming Club held its annual gala at the Streatham Baths last Friday, when the cup presented by the Managing Director was competed for between the London office and Croydon teams. The Londoners won by nine points despite the "cutwater" effect of a Croydon torpedo beard. Rumours that the Croydon import sheds, which were flooded once again on Friday, had been deliberately turned into a swimming pool for this event proved to be unfounded.

A. VIATOR.

AFRICAN PLANS

Flying Boats to the Cape : South African Airways' Part

THERE appears to be little doubt that flying boats will eventually be used more or less exclusively on Empire routes, and from a South African correspondent it is learnt that, towards the end of 1937, Durban will definitely be the terminus of a twice-weekly boat service from London. The distance will be covered in four and a half days, and all overseas first-class mail will, of course, be distributed from there.

It was stated in a Reuter message that the number of machines required will not be known until negotiations with Dominion Governments are completed. As far as South Africa is concerned, however, the proposals have been all but completed, and it can be taken for granted that the Union Government's contribution by way of subsidy will be £122,000 annually. The agreement, which is subject to the approval of the British Cabinet, will endure for twelve to fifteen years, and the South African Government's subsidy will, it is understood, be made up as follows: £52,000 for the carrying of mail matter; £30,000 contributed by the South African Railway Administration, which at present is responsible for internal flying services; £20,000 contributed from postal revenue; and £20,000 taken from general revenue.

The overland service of Imperial Airways will be discontinued, and the flying-boat service will operate across the Mediterranean to Alexandria and Khartoum, up the Nile to Kisumu on the Great Lakes, across to Kilindini and down to Durban. An overland branch service will probably be operated from Nairobi to Lusaka, the capital of Northern Rhodesia. When the new service comes into operation flying boats will operate day and night.

If the sum mentioned as the Union's contribution is approved it will represent a considerable increase on the subsidy at present paid to Imperial Airways for their overland service, the total commitment for which is £400,000, made up of varying annual payments from 1931 to the end of 1936.

It is understood in South Africa that the service to the Union will be the first to be introduced. Major Brackley, who visited all possible bases along the East Coast some time ago, said recently that Durban would make a perfect terminus and that the possibilities of the service appeared excellent.

The Internal Merger

MORE details are now available concerning the important internal air line amalgamation which was first announced in last week's issue of *Flight*. A meeting in which the proposal will be considered by the shareholders is to be held to-day.

The new company will be known as Allied British Airways, Ltd., and will be the largest air transport concern, apart, of course, from Imperial Airways, in the country. The companies involved are Hillman's Airways, United Airways, Northern and Scottish Airways, Highland Airways and Spartan Air Lines, whose routes cover some 2,000 miles and serve nearly thirty towns in this country and in Europe.

The resources of all five companies will be concentrated in one unit and the amalgamation should obviously result in better co-ordination and in a reduction of overhead expenses.

The Imperial Winter

THERE are several additions and alterations to winter services operated by Imperial Airways this season.

The London-Budapest service, for instance, which was inaugurated during the summer, is to be maintained throughout the winter, but Nurnberg will be substituted as a port of call instead of Halle-Leipzig and Prague. During the winter months the outward flight from London to Budapest will not be accomplished in a single day, a night stop being scheduled at Cologne. The flight from Croydon to Cologne is scheduled as a night flight, leaving Croydon at 20.15, Cologne being reached at 23.55. Night accommodation at the Dom Hotel, Cologne, is included in the fare. In the reverse direction the flight from Budapest to London is scheduled to be accomplished in one day, Croydon being reached at 19.05.

The twice-weekly service between London and Brindisi will be operated during the winter period in a similar manner, the outward flight to Brindisi including a night stop at Marseilles, while the inward flight from Brindisi to London is scheduled for one day.

It has also been understood that in due course Imperial Airways would be allowed to operate the coastal service, while the overland service would be operated in the Union territory by South African Airways. An obscure notice in the Government Gazette lends colour to this. It is a proclamation reserving in favour of Union aircraft carriage of persons and goods for hire between any two points within the area, including the mandated territory of South-West Africa. It is generally accepted that the Imperial Airways contract, which expires in January, 1937, will not be renewed, and the Union Government is reported to be planning the extension of the State-owned air service into tropical Africa. It is reported that the Minister of Defence (under whom Airways fall) has suggested that South African Airways should operate the entire route south of the Equator—that is, from the Cape to Nairobi and back. The Government, it appears, is prepared to run this service free of subsidy from Southern and Northern Rhodesia, Tanganyika and Kenya, which at present pay a subsidy to Imperial Airways. Mr. Pirow is said to have promised that the aircraft will operate as near 200 miles an hour as possible.

New Machines

The Government of South Africa has already called for tenders for three aircraft with a passenger capacity of ten to fourteen, and with a minimum speed of 175 m.p.h. At present South African Airways are operating four seventeen-seater Junkers Ju 52/3m. on the main routes and smaller Junkers on the South-West African coast.

Although the headquarters of South African Airways were recently transferred from Durban to Johannesburg, the projected flying-boat service is likely to make Durban at least equal in value to the Rand Airport. The City Council has already spent over £100,000 on the Stamford Hill aerodrome, and it is to spend considerably more during the next eighteen months. Large sums will be spent by the Government in developing the Durban Bay in anticipation of the flying-boat service. The South African defence authorities, of course, attach the greatest importance to the new development.

Ex Heston

THE fifth new aeroplane for Mistr-Airwork, a D.H.89, left Heston on October 1. It is proceeding to Egypt in the hands of Flt. Lt. G. F. Simond, a Royal Air Force officer who is joining his squadron in the Near East. There are three passengers on board.

British-American Air Services have been operating one of their racegoers' machines daily from Heston to Newmarket, leaving at 12.45 p.m., and bookings have been brisk.

The showing of the Gaumont film of the Baer-Louis fight in London on Monday night of last week was due to a fine piece of taxi work. Air Commerce flew to Plymouth early on Monday morning, through very sticky weather, to collect the film from the *Normandie*. The weather, however, though it permitted aeroplanes to land their passengers, did not permit the *Normandie* to do so, and she crossed to Havre. Frantic messages despatched another aeroplane to Havre, where it was found that the film had already been unloaded and despatched by train and boat to Newhaven, "to make sure." Yet another aeroplane went to Newhaven, and the pilot, arriving on board, found no sign of the package on the vessel's manifest. A prolonged search, amidst protesting officials, revealed the package lying in a corner where it had apparently been overlooked. It was put in the aeroplane at 7.40 p.m., arrived at Heston about 8, and was shown in London as advertised. There was no time to make copies for each theatre, and so the one film was rushed by taxi from each showing to the next one.

Airwork's demonstration Hornet Moth has arrived and has been showing off its paces at Edinburgh, Leeds and Newcastle.

The service department is in process of installing new equipment. Airwork is, we believe, the only independent servicing firm to have its own approved magneto service, and this department, among others, has been re-equipped. A unique item is the Bendix brake tester, which enables wheel brakes to be tested for efficiency and even adjustment without taking the aeroplane out of the hangar.

Commercial Aviation

Pan-American Traffic

SOME idea of the general increase in the volume of air traffic can be gained from the fact that during the first half of 1935 the Pan-American passenger traffic figures rose by 44 per cent.

The Isle of Man Network

A SINGLE daily return service will be flown by Blackpool and West Coast Air Services during the winter between the Isle of Man, Liverpool, Blackpool, Carlisle and Belfast. On Sundays a round trip will be made between Castletown, Blackpool and Liverpool.

Deputy Director of Civil Aviation

THE Air Ministry announces that Mr. F. G. L. Bertram, C.B.E., who retired from the post of Deputy Director of Civil Aviation on October 1, has been succeeded by Mr. J. G. Gibson, who has been for some time an Assistant Director of Civil Aviation. The services of Mr. Bertram are being retained for a limited period, for special work in connection with the new Empire Air Mail Scheme.



The new Deputy Director of Civil Aviation, Mr. J. G. Gibson.

Provincial Suspension

THE London-Plymouth service, which has been operated by Provincial Airways since March 19 last year, was suspended on September 23. During the past eighteen months the company has endeavoured to run a reliable all-the-year-round service and to build up its own booking system without the help of radio in the West or the help of the big travel agencies, who are precluded from booking any air line company which is not a member of the I.A.T.A.

A meeting of the creditors last week agreed to a moratorium of five weeks to enable the company to negotiate for the disposal of the business as a going concern. A resolution for the winding up of the company was not passed.

Monospar Economics

SOME interesting figures have recently been published by General Aircraft, Ltd., concerning the cost of aircraft operation. Opening with the quite unusually honest statement that aircraft cannot compare, save in the matter of speed, with other and older forms of transport, the booklet, *The Evidence*, then goes on to explain that infrequent services are of little value to the prospective traveller in a country where surface transport has been highly developed—"Anything that occurs with great frequency becomes commonplace and accepted."

Every contingency is allowed for in the various tables, which are calculated for operations with Monospar S.T.25 twin-engined monoplanes, and which include the use of three, of six, or of nine machines. Estimated outlays and administrative expenses are given, as well as detailed expenses covering the use of a different number of machines over various periods, over shorter or longer routes, and with a different number of services every day. In the case of the use of nine machines, with six in service, it is shown that, whereas with two 470-mile daily services, the all-in cost is £3 19s. 4d. an hour; with six trips a day the cost is only £2 4s. 5d. an hour.

All operators and prospective operators, whether or not they intend to use this particular machine, should obtain a copy of the pamphlet.

Worth-while Production

AT the present time there are 108 Douglas D.C.2s in service throughout the world, and fifty-eight of this total are used by American services. D.C.2s belonging to T.W.A., American Air Lines and Eastern Air Lines flew 7,284,437 miles of the 26,259,665 miles completed by American companies during the first six months of 1935. This is 27.7 per cent., while the Douglas fleets constituted only 13 per cent. of the total number of machines in service. Passenger traffic by T.W.A., who own twenty-eight Douglas machines, has increased from 2,591 in January, to 7,223 in July.

Bringing Them Back

WRIGHTWAYS, LTD., in addition to carrying the morning papers to Paris for Dawsons, now have a contract to bring back copies of *The New York Herald*, which is printed in Paris. The empty, or half empty, return journey has always been a source of dissatisfaction to the operators of newspaper services.

During the gales, incidentally, the Wrightways Dragon got through to Paris every time—even on a particular day when all the big companies had shut up shop for the moment. Mr. McGiverny, who flew back from Paris on one extremely bad morning after settling the return load business, says that he spent a great deal of time floating about near the roof of the cabin, clutching a bundle of precious papers, while Mr. Turner grinned unfeelingly from the pilot's seat.

Europe to America

WITH the idea of investigating all the possibilities of an Arctic air route between Europe and America, a company, known as European and American Airways, Ltd., has been formed. It is intended that machines should fly via Denmark, Scotland, the Faroe Islands, Iceland, Greenland and Canada. The directors of the company are Mr. Augustine Courtauld, well known for his recent work in the Arctic, the Hon. G. G. Rennell Rodd, and Mr. Svend Aage Dohm.

Over such a route, incidentally, the stages need not exceed 600 miles, and, though the whole distance is about 1,000 miles greater than that of the direct crossing, it is shorter than the projected Azores-Bermuda route. Both Mr. Grierson and Col. Lindberg have flown over this route.

Meanwhile, the *National Aeronautical Magazine* has announced detailed suggestions for overnight direct Atlantic services, using fifty-ton flying boats, to be developed by the Glenn L. Martin company. A private company, British Air Lines (Syndicate), Ltd., has also been formed in this country for the establishment of a flying boat base at Millbrook, Southampton, though it is not reported that Atlantic services are being considered.

Let us hope that everyone will remember to walk before trying to run.

Water, Water Everywhere

THE import sheds at Croydon, which were seriously flooded on August 23, were flooded again recently, and considerable damage to freight was caused.

These import sheds are actually Customs bonded stores, and air traffic companies are compelled by law to allow inward freight to be placed in them. When Customs took over the sheds from the Ministry it is understood that a guarantee against flooding was given, but nothing was done either before or after the August flooding, when water to a depth of four or six inches poured under the doors.

The seriousness of the situation is obvious. The commercial companies have built up their freight business largely on their reputation for careful handling of fragile and delicate goods. Many thousands of pounds' worth of freight are in constant peril. It is not only a question of intrinsic value.

In August rice samples valued at a few pence, but vitally important to the business of the London consignee, were ruined. The traffic company, which has no power to store such goods in a reasonably safe place, had to pay compensation and bear the brunt of accusations for carelessness and negligence. Excuses in such cases are of very little use. In this particular case the owner of the damaged goods found it almost impossible to believe that a Customs bonded store, owned by the Air Ministry at an old-established airport, could be liable to flooding at any moment.

Naturally the companies concerned enquired of the owners of the building whether they were prepared to pay compensation and also whether the companies could be assured that there would be no recurrence of the flooding. To the first question the authorities answered that they disclaimed all liability, and to the other no real answer was given.

A Malayan Service

THE opening of a new air service between the chief towns of Malaya is announced. Machines will operate between Singapore, Kuala Lumpur, Penang and Ipoh. The service is likely to begin early next year, and among local concerns associated with the venture is the Straits Steamship Company, which operates a coastal shipping service in Malaya.

Towards the end of the year it is probable that the final section of the Empire route between Singapore and Australia will be duplicated.

Jaipur Aerodrome

THE new Jaipur aerodrome, which has been under construction for some months at Sangar, six miles from Jaipur City, is now nearing completion and is expected to be ready in October. The aerodrome, which is being provided with a hangar and with facilities for night landing, promises to be one of the best in India.

Besides the aerodrome at Jaipur, landing grounds have also been built at Sawami-Madhupur, Isarda, Malpura and Jhunjhuni in order to facilitate approach to the different parts of the State.

New Soviet Commercial Type

A TWIN-ENGINE high-speed passenger machine has recently been turned out by the Moscow Civil Air Fleet Plant. The ZIG-1, as the new aeroplane is called, is of all-metal construction and carries twelve passengers.

The ZIG-1 is the first high-speed passenger type to be added to the Soviet Civil Air Fleet. Its two M-17 motors, each of 500 h.p., give it a cruising speed of 172 m.p.h. and a top speed of 187 m.p.h. The landing speed is given as 50 m.p.h., and the take-off time as seven seconds.

Srinagar's Aerodrome

THE new aerodrome at Srinagar was brought into use recently when an Indian National Airways' machine flew specially from Delhi to make the first landing. The airport has been laid out by State officers with the advice of Indian National Airways' officials. There are two runways of 700 yards, and it was officially opened by the Maharaja, who is keenly interested in the development of civil aviation in Kashmir, and has his own machine.

A Tokyo-Singapore Service?

WITH a decision definitely reached to inaugurate an air service between Japan proper and Formosa next January, and with a daily service between Japan and Manchukuo, actually functioning, the possibility of extending the southern line to Singapore is, according to the *Far Eastern Review*, now under discussion. Officials of the Japan Air Transport Company and the Aviation Bureau of the Japanese Ministry of Communications are said to be studying the practicability of extending the Formosa service from Taihoku to Singapore.

Another Air Transport Conference

THE Aerodrome Owners' Association, which works under the auspices of the S.B.A.C., has decided to hold another conference early next year.

Last January two hundred and fifty delegates, representing the majority of aircraft operators in Great Britain, forty-two municipal authorities who were then the owners of aerodromes or were considering their acquisition, and the chief private companies controlling aerodromes, met for three days to discuss mutual problems and to hear papers bearing on fundamental principles of air line and aerodrome organisation and development.

In the months that have followed that first conference the Aerodrome Owners' Association has grown considerably in membership and importance. Originally simply a subdivision of the Air Transport Section of the S.B.A.C., it has become an autonomous body with greatly extended powers and responsibilities. It now has forty-four members, of whom thirty are municipal authorities—which means that the majority of municipal aerodrome owners in Britain are members of the Association.

Among the many vital matters which will require the attention of the Association during the next few months will be a report from the Air Ministry on air routes and landing facilities within the British Isles. In April this year a deputation from the Association interviewed Lord Londonderry, then Secretary of State for Air, and secured from him an undertaking that the Ministry would survey the country and make a useful report. The survey was started without delay and a report, now in course of preparation, should reach the Association before the end of this year.

CIVIL FLYING IN 1934

The Air Ministry Report : Some Noteworthy Figures

THE Report on the Progress of Civil Aviation, 1934,* gives a full and interesting account of the developments during the year with which it deals. Most of these developments have been dealt with fully in the pages of *Flight*, and no good purpose would be served by repeating the facts. The following points, however, are of special interest and deserve brief notice.

Official Assistance.—The following are the amounts allotted by Governments of the British Empire for the furtherance of civil flying during the year 1934-5:—United Kingdom, £544,000; Canada, £43,568; Australia, £163,860; New Zealand, £14,850; South Africa, £84,337; India, £106,827; African Colonies and Sudan, £70,533; total, £1,027,975.

Empire Mileage.—The miles of Empire routes in regular operation in the year 1934 were as follows (the section operated by Imperial Airways in conjunction with Indian Trans-Continental Airways is shown under India, and that operated by Qantas Empire Airways under Australia; as regards the other countries, the figures relate to internal services only):—United Kingdom, 13,750; Canada, 5,080; Australia (including New Guinea), 12,050; South Africa, 1,180; South-West Africa, 780; India, 6,820; Southern Rhodesia, 1,200; Kenya, 550; total, 41,390 miles. This figure puts the British Empire second as compared with other countries and empires, the United States coming first with 50,800 miles. Germany is third with 23,440, France fourth with 31,290, and Holland fifth with 11,820 miles.

Passengers and Freight.—During the year regular services by United Kingdom companies (including inland services and those of Imperial Airways as far as Singapore and Capetown) carried 135,100 passengers, 250 tons of mails, and 1,172 tons

of freight. All these figures were great advances on the previous year. The value of the imports by air was £1,234,029 and of exports and re-exports £2,081,570.

The accidents with serious results on all British regular air transport services (including all Imperial Airways' operations at home and abroad) totalled two, in which nine passengers and two members of crews were killed. Apart from these cases, there were no serious injuries. These two fatal accidents occurred in 51,600 flights in which the aircraft covered 4,557,000 miles, while the passenger mileage was 29,162,000. Flying was certainly very safe on regular services last year.

During the year the export of aircraft engines and spares recovered to a great extent from the depression of the previous year and amounted to a value of £1,921,202, but it is still some way behind the figure of £2,158,667 for the record year 1929.

Compression-ignition Engines.—It is interesting to note that the Civil Aviation Department is in agreement with *Flight* as regards the prospects of the compression-ignition engine. The report states: "Up to 25 per cent. greater power output is being obtained from certain British petrol engines, without any corresponding increase in weight, size, or fuel consumption, largely through the use of petrol fuels of higher "octane" number which do not detonate so readily, and therefore enable compression to be increased. Further development along these lines may enable the petrol engine to rival the heavy-oil engine in economy of fuel consumption."

Marking High-tension Cables.—To end on a depressing note, the report states that "It has not yet been possible to arrive at any satisfactory conclusions as to the most desirable method of indicating the presence of pylons and cables. The matter is, however, still being investigated."

* ss., H.M. Stationery Office, Kingsway, London, W.C.2.

THE INDUSTRY

Award for Merit

THE makers of Exide batteries have been awarded a diploma in class 18 for their exhibit at the Brussels Exhibition.

Drills on Show

DESOUTTER portable electric drills of the type described in *Flight* of June 6, and other portable tools of the kind in which Desoutter Brothers, Ltd., specialise, will be exhibited on stand No. 535 in the garage equipment section of the Olympia Car Show, from October 17 to 26.



APPOINTMENT: Flt. Lt. Christopher Clarkson, who has taken up the post of aviation manager to the Anglo-American Oil Company, Ltd. He left the Service in 1929—he had been an instructor at the C.F.S.—and joined Selfridge's Aviation Department in 1931; in 1933 he went to Brian Lewis and Co., as general manager. (*Flight* photograph.)

About Plugs

A VERY complete and extremely informative catalogue of aerc engine plugs and plug accessories has just been issued by K.L.G. Sparking Plugs, Ltd., Putney Vale, London, S.W.15. It describes in detail the sixteen types of K.L.G. aeroplane plugs—12 mm., 14 mm. and 18 mm.—including the interesting "Wizard" plug, with its sixteen firing points, which has been standardised for almost the whole of the Imperial Airways fleet of radial engines. Also dealt with in the catalogue are screened terminals, testing apparatus (for observing the sparking of a plug under gas pressure), plug tools, and instructions for plug cleaning and maintenance.

King's Cup Compasses

WITH reference to a claim inadvertently made by Smith's Aircraft Instruments to the effect that the winner of the King's Cup Air Race was fitted with a "Husun" compass, we have been asked to point out that this was afterwards found to be incorrect, and that the compass used was, in fact, one of Short and Mason's "Sestrels."

All-Electric

ENGINE- and wind-driven generators, electric starters, auxiliary motors, switchgear, batteries, and landing and navigation lights: all these, and a number of other items, are very fully dealt with in the new catalogue of aviation electrical equipment just issued by Rotax, Ltd., Willesden Junction, London, N.W.10.

A Matter of Weight

LOW weight is an important feature in the case of the Lockheed hydraulic remote controls. The weights vary between 16 lb. for the undercarriage retracting jack, which takes 11,000 lb. in compression, and the 2 lb. of the flap-operating jack, which is designed to take 1,000 lb. The makers state that they recently erroneously announced the weight of the latter as 5 lb.

AERONAUTICAL PATENT SPECIFICATIONS

[The numbers in brackets are those under which the Specifications will be printed and abridged, etc.]

Published October 10th, 1935.

- 7777. THORNYCROFT AND CO., LTD., J. L., and THORNYCROFT, SIR J. E.: High-speed aircraft carriers. (434,958.)
- 7779. PILAIN, R.: Devices for compensating the action of the wind on aircraft gun-supporting turrets. (435,040.)
- 18694. SHORT, H. O., and GOUGE, A.: Windscreens on aircraft. (434,843.)
- 27519. TELEFUNKEN GES. FÜR DRAHT-LOSE TELEGRAPHIE.: Course-indicating instruments for use on aircraft equipped with radio receivers for co-operation with so-called wireless lighthouses. (435,072.)

PUBLICATIONS RECEIVED

Solider: No. 2 (September, 1935.) Bulletin of the International Tin Research and Development Council, Manfield House, 378, Strand, London, W.C.2.
Air Publication 1529: *Abbreviations to be Used in the Civil Aeronautical Radio Service.* Price 1s. 0d.
Aeronautical Research Committee Reports and Memoranda, No. 1625: *Pressure Distribution on Wings with Ailerons.* By W. L. Cowley and G. A. McMillan. Price 3s. 6d.
No. 1641: *Cooling of an Air-Jacketed Engine.* By A. S. Hartshorn. Price 3s. 6d.
No. 1658: *Abstract: A New Surface Extensometer.* By T. W. K. Clarke. Price 2d.
H. M. Stationery Office, Adastral House, Kingsway, London, W.C.2.
Aluminium Facts and Figures, British Aluminium Co., Ltd., Adelaide House, London, E.C.4

NEW COMPANIES

In the notes below, for reasons of space, the "objects" of new companies are usually somewhat abbreviated.

AIRCRAFT ASSOCIATED LTD. Registered as a private company on September 30. Nominal capital, £1,000 in 1s. shares. Objects: To carry on mercantile, financial, aeronautical and other business, to operate aerodromes, airports, etc., and to manufacture aircraft of all kinds. First directors to be appointed by the subscribers. Registered office: 177, Regent Street, London, W.1.

CONSOLIDATED AIRCRAFT CORPORATION, LTD. Registered as a private company on September 30, with a nominal capital of £1,000 in 1s. shares. Objects and other particulars similar to those of Aircraft Associated, Ltd.

ALLIED BRITISH AIRWAYS LTD. Registered as a private company on September 30. Nominal capital, £100 in £1 shares. Objects: To operate air lines between such places as may be selected in any parts of the world; to carry on the business of aerodrome and air transport service proprietors, etc. First directors not named. Solicitors: Slaughter & May, 18, Austin Friars, E.C.

BRITISH AIR LINES (SYNDICATE) LTD. Registered as a private company on October 4. Nominal capital, £1,000 in £1 shares. Objects: To establish a company for the manufacture, purchase and operation of flying ships and other aircraft for the transport of passengers, mails and goods, etc. First directors not named. Registered office: 34/5, Norfolk Street, Strand, London, W.C.2.

Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in the list.

Oct. 12-28. International Aircraft Exhibition, Milan.

Oct. 21. R.Ae.S. Lecture: "Piloting Commercial Aircraft," by Maj. H. G. Brackley, 6 p.m., Institution of Electrical Engineers.

Oct. 23. Royal United Service Institution Lecture: "The Defence of the Population Against Air Attack," by Wing-Commr. E. J. Hodson, at 3 p.m.

Nov. 4. R.Ae.S. Lecture: "The Prevention of Ice Accretion," by B. Lockspeiser, 6 p.m., Institution of Electrical Engineers.

Nov. 13. Royal United Service Institution Lecture: "Oil from Coal in War Time," by Col. W. A. Bristow, at 3 p.m.

Nov. 18. R.Ae.S. Lecture: "Cooling Problems, with Particular Reference to the Work of the 24-ft. R.A.E. Tunnel," by Dr. G. P. Douglas, 6 p.m., Institution of Electrical Engineers.

Nov. 29. Yorkshire Aeroplane Club. Annual Ball, Hotel Majestic, Harrogate.

Dec. 2. R.Ae.S. Lecture: "Undercarriage Design," by G. H. Dowty, 6 p.m., Institution of Electrical Engineers.

Dec. 6. Hampshire Aeroplane Club: Tenth Annual Dinner and Dance, South Western Hotel, Southampton.

Dec. 16. R.Ae.S. Lecture: "Wireless and its Application to Commercial Aviation," by Capt. J. M. Furnival, 6 p.m., Institution of Electrical Engineers.

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Jan. 22. Royal United Service Institution Lecture: "The Expansion of the Royal Air Force," by Air Marshal Sir C. L. N. Newall, at 3 p.m.

Mar. 10. Royal United Service Institution Lecture: "The Development of Civil Aviation," by Lt.-Col. F. C. Sheldermine, at 3 p.m.